Ice Industry to Launch Magazine Campaign And NBC Radio Program This Week

CHICAGO—Two biggest guns in the ice refrigeration industry's drive for 1937 business—national magazine advertising and a half-hour coast-to-coast radio program—are scheduled to be rolled into action Wednesday, Feb. 10.

Full-page advertisements in the March issue of *Ladies' Home Journal* and *Pictoral Review*, on the newsstands Feb. 10, lead off the barrage, to be followed by the NBC red network program, featuring Gladys Swarthout and Frank Chapman, from 9:30 to 10 o'clock tonight (10:30 to 11 E.S.T.).

Other advertisements are scheduled to appear in the Feb. 20 issue of *Saturday Evening Post*, out Feb. 16, and in March *Good Housekeeping*, out Feb. 25. Total circulation of the magazines being used in the drive is 10,032,590 copies.

The *Ladies' Home Journal* and *Pictoral Review* ads are timed to tell the story of the evening radio program, as well as the story of ice refrigeration. The *Journal* ad, in full colors, is headlined ". . . And the Most Modern Thing in This Modern Kitchen . . . Is the Air-Conditioned Ice Refrigerator." Copy begins: "Modern in its gleaming beauty! But even more modern in the extraordinary way in which it gives foods the complete protection they must have to keep them fresh, wholesome, and nutritious."

The ad ends by inviting the reader to call his local ice company and arrange for a free trial. Boxes in the ad are headlined: "No Rapid Drying Out of Foods"—"Plenty of Pure Taste-Free Cubes"—"Real Ice Cream"—and "A Grand Radio Show."

Pictoral Review ad is headed "3-Way Food Protection is Newest Scientific Advance," much the same as that in the *Saturday Evening Post*. The *Good Housekeeping* ad strikes a new note, love of children. Caption reads: "Especially Where There Is a Child . . . You owe it to yourself to know the FACTS about this amazing new development in refrigeration."

This ad, as well as the others, carries a "Facts" panel, which gives data about ice refrigeration, and the ice industry.

It is planned to continue the magazine schedule well into the summer months, with about the same number of advertisements and the same circulation per month. Special fields to be covered in the drive include those served by grocery, meat market, restaurant, and home economics trade papers.

The Swarthout-Chapman radio program will be heard over a network of 56 stations. Sponsors feel that they have placed the program in a good "spot," following two standout attractions, Fred Allen, from 9 to 10 p.m., and the Lucky Strike Hit Parade, from 10 to 10:30, E.S.T.

In addition, the ice industry also has Eleanor Howe on a CBS national hookup at 11:15 a.m. E.S.T., Tuesday and Thursday.

Minneapolis-Honeywell Buys National Regulator

MINNEAPOLIS — An agreement for the acquisition by Minneapolis Honeywell Regulator Co. of the complete line of controls manufactured by the National Regulator Co., Chicago, has been completed by officials of the two companies, it was announced here last week.

With the addition of National controls, Minneapolis-Honeywell is now able to supply the heating, ventilating, and air-conditioning industries with a complete range of both pneumatic and electric controls and control systems, it was stated.

The coordinated service, it is hoped, will result in an increased efficiency and economy in heating, ventilating, and air-conditioning installations, Minneapolis-Honeywell's announcement of the combine stated.

Heinz & Munschauer Output Is 40% Ahead of 1936

BUFFALO—To fill orders taken following the introduction of the 1937 line of Dayton electric refrigerators in New York and Chicago markets, production lines at the Heinz & Munschauer factory here are working on an overtime basis, according to Paul L. Hanson, sales manager.

"Production on the 1937 models is 40% ahead of that for the corresponding period of 1936," Mr. Hanson stated.

Dealer's Hardest Task Is to Replace 17-Year Old Jobs

RICHMOND, Ind.—One of the hardest tasks confronting H. R. Marlatt of Electric Service, Inc., Frigidaire dealer here is that of trying to replace two 17-year old Frigidaire refrigerators that are still in operation.

The wealthiest man in town, whose name is withheld from publication, owns one of the machines, an outmoded but not out-lived unit. The owner contends that as long as the refrigerator continues to serve its purpose it is foolish to buy a new one.

The other 17-year old Frigidaire is installed in the laboratories of the biology department of Earlham College, one of the oldest institutions of learning in the country. Specimens used in experiments and research work are preserved in the refrigerator.

ORDER NOW

Subscription Rates Will Be Increased March 1, 1937

Renew your subscription; take advantage of special rates for combination orders.

BOOKS NOW AVAILABLE

Vol. 1—1935 Refrigeration and Air Conditioning Directory
Vol. 2—1935 Refrigeration and Air Conditioning Market Data Book
Vol. 3—Master Electric Refrigeration Service Manual
Vol. 4—1936 Refrigeration and Air Conditioning Specifications Book
Vol. 5—Refrigeration Engineer's Manual

SCHEDULED FOR PUBLICATION IN 1937

Vol. 6—Commercial Refrigeration Service Manual
Vol. 7—1937 Refrigeration and Air Conditioning Directory
Vol. 8—Air Conditioning Made Easy

SPECIAL OFFERS

No. 1—$3.00—NEWS for one year.
Foreign Postage, $2.00 extra.
No. 2—$3.00—Any one book.
Foreign postage, 50¢ extra.
No. 3—$5.00—NEWS, two years.
Foreign postage, $4.00 extra.
No. 4—$5.00—NEWS and any one book.
Foreign Postage, $2.00 extra.
No. 5—$5.00—Any two different books.
Foreign postage, 50¢ extra.
No. 6—$6.50—NEWS and two different books.
Foreign Postage, $2.00 extra.
No. 7—$6.50—Any three different books.
Foreign postage, 50¢ extra.
No. 8—$8.00—NEWS and three different books.
Foreign Postage, $2.00 extra.
No. 9—$7.50—Any four different books.
Foreign postage, 50¢ extra.
No. 10—$9.00—NEWS and four different books.
Foreign Postage, $2.00 extra.
No. 11—$8.50—Any five different books.
Foreign postage, 50¢ extra.
No. 12—$10.00—NEWS and five different books.
Foreign Postage, $2.00 extra.
No. 13—$9.50—Any six different books.
Foreign postage, 50¢ extra.
No. 14—$11.00—NEWS and six different books.
Foreign Postage, $2.00 extra.
No. 15—$10.50—Any seven different books.
Foreign postage, 50¢ extra.
No. 16—$12.00—NEWS and seven different books.
Foreign Postage, $2.00 extra.
No. 17—$11.50—All eight books.
Foreign postage, 50¢ extra.
No. 18—$13.00—NEWS and eight books.
Foreign Postage, $2.00 extra.

These rates apply only if order is mailed on or before Feb. 28, 1937.

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☐ 1936 SPECIFICATIONS BOOK
☐ REFRIGERATION ENGINEER'S MANUAL
☐ 1937 REFRIGERATION AND AIR CONDITIONING DIRECTORY
☐ COMMERCIAL REFRIGERATION SERVICE MANUAL
☐ AIR CONDITIONING MADE EASY
☐ 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY (This book only $1.50)
☐ 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA (This book only $1.50)

(Signed) .....

Company .....

Address .....

Type of Business .....

REFRIGERATION JOBBERS

NOTICE—Any of the following refrigeration supply jobbers will take your order for a subscription to Air Conditioning and Refrigeration News or deliver (from stock) copies of these popular books: The Master Service Manual (456 pages, price $3.00); Refrigeration and Air Conditioning Specifications (512 pages, price $3.00); The Refrigeration Engineer's Manual (224 pages, price $3.00). Foreign countries, 50¢ extra.

A. E. Borden Co.
145 High St.
Boston, Mass.

Refrigeration Supply Co.
100 Washington St.
Brookline, Mass.

Westville Electric Co.
89 Goffe St.
New Haven, Conn.

Service Supply Co.
241 Water St.
Binghamton, N. Y.

Root, Neal & Co.
178 Main St.
Buffalo, N. Y.

Sid Harvey, Inc.
236 Main St.
Hempstead, L. I., N. Y.

Aetna Supply Co.
407 E. 152nd St.
New York, N. Y.

Harry Alter Co.
161 Grand St.
New York, N. Y.

Federal Refrigerator Corp.
57 E. 25th St.
New York, N. Y.

T. W. Binder Co.
29 S. Orange Ave.
Newark, N. J.

Victor Sales Corp.
2222 Arch St.
Philadelphia, Pa.

Wm. M. Orr Co.
1228 Brighton Rd.
Pittsburgh, Pa.

Williams & Co.
901 Pennsylvania Ave.
N.S. Pittsburgh, Pa.

Radio Service Co.
50 Hazle St.
Wilkes Barre, Pa.

Refrigeration Supply Co.
1647 W. Broad St.
Richmond, Va.

M. D. Patterson Co.
119 Courtland St., S. E.
Atlanta, Ga.

Williams & Co.
Henry & Dunlap Sts.
Cincinnati, Ohio.

Debes & Co.
1249 E. 105th St.
Cleveland, Ohio.

Harry Alter Co.
4506 Prospect Ave.
Cleveland, Ohio.

Refrigeration Supplies Distributor
2223 Chester St.
Cleveland, Ohio.

Williams & Co.
1748 E. 22nd St.
Cleveland, Ohio.

Hughes-Peters Electric Co.
178 N. Third St.
Columbus, Ohio.

F. H. Langsenkamp Co.
229 E. South St.
Indianapolis, Ind.

W. C. Du Comb
6335 Palmer Ave., East
Detroit, Mich.

J. M. Oberc, Inc.
904 W. Baltimore
Detroit, Mich.

Young Supply Co.
1050 W. Baltimore
Detroit, Mich.

Shand Radio Specialties
203 W. Kearsley St.
Flint, Mich.

W-M Refrigeration Co.
2468 N. Third St.
Milwaukee, Wis.

Airo Supply Co.
410 N. Wells St.
Chicago, Ill.

H. W. Blythe Co.
2334 S. Michigan Ave.
Chicago, Ill.

H. Channon Co.
133 N. Wacker Dr.
Chicago, Ill.

Standard Refrigeration Parts Co.
5101 W. Madison Ave.
Chicago, Ill.

Harry Alter Co.
1728 S. Michigan Ave.
5217 W. Madison St.
4611 N. Western Ave.
7821 Stony Island Ave.
Chicago, Ill.

Harry Alter Co.
2315 Washington
St. Louis, Mo.

Brass & Copper Sales Co.
2817 Laclede Ave.
St. Louis, Mo.

The Spangler Co., Inc.
3331 Market St.
St. Louis, Mo.

R. E. Thompson Co.
1538 Tower Grove Ave.
St. Louis, Mo.

The Spangler Co., Inc.
623 St. Charles Ave.
New Orleans, La.

Refrigeration & Industrial Supply
422 S. Seventh St.
Minneapolis, Minn.

Thermal Service Co.
2490 University Ave.
St. Paul, Minn.

Republic Electric Co.
116 E. First St.
Davenport, Iowa.

C. L. Percival Co.
11th & Cherry Sts.
Des Moines, Iowa.

Refrigeration Supply Co.
359 Wesley Way
Sioux City, Iowa.

Burstein-Applebee Co.
1012 McGee St.
Kansas City, Mo.

Ruegg Refrigeration Supply Co.
245 S. 11th St.
Lincoln, Nebr.

United Supply Co.
207 N. 16th St.
Omaha, Nebr.

Refrigeration Supply Co.
2019 Commerce St.
Dallas, Texas.

Westbrook Carburetor Electrical Co.
301 South Main St.
San Antonio, Texas.

Refrigerating & Power Specialties Co.
1007 E. Burnside Ave.
Portland, Ore.

Refrigeration Service, Inc.
3109 Beverly Blvd.
Los Angeles, Calif.

Refrigeration Supplies Distributor
222 N. Vermont Ave.
Los Angeles, Calif.

Refrigeration Parts Exchange
3214 Beverly Blvd.
Los Angeles, Calif.

Hinshaw Supply Co.
1319 J St.
Sacramento, Calif.

California Refrigerator Co.
1077 Mission St.
San Francisco, Calif.

Davis Automatic Controls Co.
145 Wallington St., W.
Toronto, Ontario, Canada.

Modern Household Appliances, Ltd.
1106 Beaver Hall Hill
Montreal, P. Q., Canada.

F. C. Lovelock, Ltd.
235 Clarence St.
Sydney, N.S.W., Australia.

J. Russell Hancock, Ltd.
49 Courtenay Place
Wellington, New Zealand.

Refrigeration Supplies, Ltd.
49 Courtenay Place
Wellington, New Zealand.
New Zealand Express Bldg.
Port St.
Auckland, New Zealand.

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Bombay, India.
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References: Dun & Bradstreet—Nat'l City Bank

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V20#7 APR 4 1937 1 month

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REFRIGERATION NEWS

Established 1926 and Registered U. S. Patent Office as Electric Refrigeration News
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 20, NO. 7, SERIAL NO. 413
ISSUED EVERY WEDNESDAY

Entered as second-class matter Aug. 1, 1927

DETROIT, MICHIGAN, FEBRUARY 17, 1937

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TEN CENTS PER COPY

KELVINATOR RESUMES PRODUCTION TODAY

14 New Models By Frigidaire Stress Usability

New Ice Cube Release, Outside Thermometer Head New Features

DAYTON—With emphasis on new and improved convenience features which afford greater "usability," the 1937 line of Frigidaire household electric refrigerators is being introduced this month to Frigidaire dealers in all parts of the country, and will be introduced to the public March 7, according to Frank Pierce, manager, household division.

Principal new convenience features include:

1. An instant cube-release, comprised of a metal lever connected to the divider, which serves to release the cubes instantly from the metal grids.

2. Food safety indicator on the exterior of the cabinet, part of the nameplate, which indicates a "safety zone," "danger zone," or "freezing zone."

3. Multipoint double-range cold control with six speeds colder and five speeds warmer; and automatic reset defrosting controls.

4. Nine-way adjustable interior.

Frigidaire's 1937 line of 14 household electric refrigerator models is split into three series—a low-priced line (the "D" models); the "Master" series; and the "Deluxe" models.

Suggested cash installed Zone 2 prices (including the 5-year protection plan on the hermetically sealed condensing unit) are as follows:

Model	Net Cu. Ft.	Price
D 3-37	3.1	$108.00
DRS 5-37	5.1	149.75
DRS 6-37	6.2	169.75
DRS 7-37	7.2	199.75
Master 4-37	4.1	133.50
Master 5-37	5.1	172.00
Master 6-37	6.2	199.50
Master 7-37	7.2	224.50
Master 8-37	8.25	249.50
Deluxe 5-37	5.1	192.50
Deluxe 6-37	6.2	219.50
Deluxe 7-37	7.2	244.50
Deluxe 8-37	8.25	269.00
Imperial-37	13.5	390.50

The Frigidaire rotary, hermetically sealed "meter miser" unit is standard on all models this year, even to the 13½-cu. ft. model. The "meter miser" has but three major moving parts, which are permanently sealed in oil.

Freon-114 is used in all Frigidaire household condensing units this year.

The instant cube-release device works on a cam principle, the user grasping the top of the grid section with his left hand and raising a lever with his right hand. The construction is such that by raising the lever but slightly, only two cubes

(Concluded on Page 4, Column 1)

Seeger Completes New Warehouse

ST. PAUL — Seeger Refrigerator Co. has just completed construction of a new one-story yellow brick and concrete warehouse building across the street from its Arcade St. plant, reports J. J. Leonard, sales manager of the company.

The building, 354 feet long and 150 feet wide, contains 70,801 sq. ft. of floor space, with storage space for 54,000 refrigerator cabinets. Cost of the building, according to Mr. Leonard, was approximately $180,000.

The warehouse is built on a hill, with the top of the building at the ground level on Arcade St., and about 25 or 30 feet above the ground at its opposite end. It is located along a railroad siding, with room to dock

(Concluded on Page 12, Column 5)

Dealers to Battle Group Buying in Grand Rapids

GRAND RAPIDS, Mich. — The Grand Rapids Appliance Dealers' Association has been organized here as an affiliate of the recently formed Michigan Appliance Dealers' Association.

Purpose of the Grand Rapids organization, which was started with a membership of 31 dealers, is to further good trade practices and to seek by united action to eliminate group buying and other "evils," which, it is claimed, "have been causing dealers tremendous losses."

"Every purchasing agent takes pride in the fact that he can buy appliances as cheaply as the appliance dealer, who is required by the wholesaler to carry a certain amount of stock at all times to hold the agency," says a statement issued by the association.

"Instead of the wholesaler trying to keep this pirating down to a minimum, some of them have encouraged it. The wholesaler must either support his dealers or not expect support from them. The honest wholesaler is supporting this movement to stop pirating."

J. Zweedyk is president of the Grand Rapids association; H. S. Morrow is vice president, H. F. Cole treasurer, and C. A. Lass secretary.

J. Goldsmith, W. L. Jersey, E. A. Ravencroft, and C. Van Molsen are on the board of directors. Offices of the organization are at 518 Burton St., S.E.

Sales Tax on Appliances Proposed in Missouri

JEFFERSON CITY, Mo.—Electric refrigerators, washers, ironers, and ranges are included in a bill providing for a sales tax of 5% on "luxury items," introduced in the Missouri legislature by State Representative Downing.

Seven Sparton Models in Two Lines Presented

Deluxe Units Include 'Enchanted Clock;' Cabinets Restyled

JACKSON, Mich. — Seven new streamlined Sparton electric refrigerators, ranging in capacity from 4.6 to 9 cu. ft., have been introduced by Sparks-Withington Co. for 1937. The line is being shown by distributors in a series of regional meetings throughout the country.

Four Deluxe and three Standard models comprise the Sparton line. Styling is identical throughout, the Deluxe units differing from their mates only in that they are equipped with the "Enchanted Clock," an exclusive Sparton feature, the Vegabin, crispers, and the Thrifter, mounted inside the door.

Arrangements are such, however,

(Concluded on Page 6, Column 4)

Feb. 28 Is Deadline for Subscriptions to News At Existing Rates

Only a few more days remain for subscribers to renew or extend their subscriptions to AIR CONDITIONING AND REFRIGERATION NEWS at the existing rates, as orders for new subscriptions, renewals, or extensions will not be accepted at present rates **if postmarked later than Feb. 28.** Because of rising production costs and the enlarged scope of editorial services, the subscription rate is being increased on March 1.

See subscription blank on page 18 of this issue for order form and present combination rates on the NEWS and various books.

Agreement with Union Brings Immediate Opening of Plants

Wage Scale Increased, Other Issues Will Be Arbitrated Later

DETROIT, Feb. 16.—All employes of the Plymouth Road and Fort St. plants of Nash-Kelvinator Corp. will return to work Wednesday (Feb. 17) according to the terms of an agreement reached by company and union representatives late Monday night and made public this morning in the courtroom of Circuit Judge Henry G. Nicol.

The agreement, signed by Alex J. Groesbeck for the company, and by Matthew Smith and Maurice Sugar, national secretary and attorney, respectively, for the Mechanics Educational Society of America, officially terminated the strike, which has kept the main plant of the Kelvinator division inoperative since Feb. 2. The service plant has been tied up since last Wednesday, Feb. 10.

Under the terms of the settlement, the company agrees not to discriminate against any employe because of participation in anything that has occurred, or because of membership in any labor organization.

Wage increases, to become effective in both plants on Feb. 18, were agreed upon as follows:

"There shall be a minimum wage of 75 cents per hour for men, excepting in classes C and D of the company's labor classification, wherein there shall be a minimum hiring rate of 65 cents. This rate shall be increased to 70 cents per hour at the end of 30 days' work.

"Women employes will receive a minimum of 60 and 65 cents, according to classification.

"All workers shall receive a flat hourly increase of wages over their hourly earnings (including bonus), such increase to be added to the average hourly rate (including bonus) earned by each worker during the period from Dec. 1, 1936 to Jan. 20, 1937. The increases shall be as follows: classes A, B, C, D, and E, 5 cents per hour; class F, 6 cents per hour; classes G, H, J, K, and L,

(Continued on Page 2, Column 1)

Conditioner Orders Up 15.6% in Dec.

WASHINGTON, D. C. — Orders booked by manufacturers for air-conditioning systems and equipment during December totaled $4,229,134, an increase of 15.6% over the $3,657,961 reported for November, according to statistics compiled by William L. Austin of the Bureau of the Census, Department of Commerce.

December orders brought the total for the year to $43,566,678, of which $18,765,168 was for air-conditioning alone, $14,344,569 for fans, and $10,456,941 for unit heaters.

Of the December total, air-conditioning equipment accounted for $1,970,302, fans for $1,116,512, and unit heaters for $1,142,320.

The month was the third best during the year, only May, with $4,412,681, and June, with $4,336,636, showing better marks for equipment orders. Ranking in orders for air-conditioning equipment alone was the same, with May showing a total of

(Concluded on Page 17, Column 3)

100 York Distributors Meet at Factory

YORK, Pa.—Distributors of commercial refrigerating and air-conditioning equipment manufactured by the York Ice Machinery Corp. concluded their second annual convention in the Hotel Yorktowne last week. After the convention, a technical school for distributors and their engineers was conducted at the factory.

Representing all parts of the country, the 100 distributors heard W. S. Shipley, president of the company, relate the story of how the York company grew from a very

(Concluded on Page 12, Column 2)

Authorities Are Indulgent Toward New Strike Technique

—Photo Courtesy the Detroit News.

Scene in front of the Kelvinator plant in Detroit on Tuesday morning, Feb. 9, which shows how a small but well-organized group of Union pickets prevented office workers from entering the building. The two lines on the sidewalk kept moving in opposite directions, becoming aggressive if anyone attempted to cut through. The police, obviously acting under orders, did not interfere with the activities of the picket line but insisted that no "act of violence" be committed. Thus office workers were jockeyed into the position of being the aggressors if they attempted to exercise their normal right to go to work. The attitude of the local police reflected that of the Governor of the State of Michigan in connection with the General Motors strike at Flint. Governor Murphy, in turn, has apparently been interpreting the policy of President Roosevelt. The attitude of the government was the most significant feature of the situation.

General Refrigeration Offers Evaporative Condenser Line

BELOIT, Wis.—General Refrigeration Corp. is introducing a new line of evaporative condensers here for use with Freon-12 or methyl chloride.

This unit, which is called the "Hydrocyclonic" condenser by its manufacturer, is entirely self-contained, as the condenser coil, fan, water lift, driving motor, water storage, and controls are located as one unit within a circular tank.

At the top center of the tank is a screened air inlet through which air is drawn by the fan to be discharged centrifugally outward through the condenser coils which are arranged around the fan somewhat in the manner of the conventional "scroll" or fan housing.

Located below the water line of the storage tank and attached to the lower end of the vertical fan shaft is a "water lift" which throws water upward so that it mixes with the air stream as it is thrown from the fan wheel. Thus an intimate mixture of air and water is thrown against the condenser coils to obtain the evaporative cooling effect.

A side outlet with elbow and duct connection is provided at the air discharge.

The condenser coil consists of a series of flat "pancake" coil sections, which are connected into refrigerant

(Concluded on Page 13, Column 5)

UNIVERSITY OF CALIFORNIA LIBRARY BRANCH OF THE

Kelvinator Strike Ends After 2 Weeks; Company Officials Explain Why Injunction Was Sought

(*Continued from Page 1, Column 5*)

7½ cents per hour; production employes, including inspectors, in class Z, 7½ cents per hour."

Both parties agreed that, immediately upon the resumption of business and work at the Kelvinator Detroit plants, all remaining issues shall be negotiated. Such negotiations shall begin within two weeks, and be determined within 40 days from this date."

The agreement also provided that "upon the restoration of the company's plants, the injunction proceedings may be dismissed."

The injunction referred to was asked by Mr. Groesbeck on behalf of the company, demanding that union representatives show cause why sit-down strikers should not be evicted because of what was termed "unlawful possession" of the Kelvinator Plymouth Road plant.

This joint agreement was reached after Mr. Groesbeck, Mr. Sugar, Mr. Smith, and Lawrence Rothenberg, associate of Mr. Groesbeck, had conferred for four consecutive days in Mr. Groesbeck's office in the Dime Bank Building. The consultation had been suggested by Judge Nicol, before whom the injunction proceedings were to be held.

The hearing on the injunction, first scheduled for 2 p.m. Thursday, Feb. 11, was postponed twice as the conferees struggled toward a peaceful settlement. By Monday, last day of the four-day session, the opposing factions had agreed on all but one minor point. After a full day of discussion, this single difference of opinion was settled, and the final proposal drafted.

The Strike in Review

Following is a chronological review of happenings in the Kelvinator strike:

During the noon hour on Tuesday, Feb. 2, about 112 workers in the Kelvinator assembly plant on Plymouth Road staged a demonstration, demanding minimum wages of 75 cents per hour for men and 65 cents for women.

Other employes did not return to work in the afternoon, and the production lines were shut down.

The 112 workers then began a sit-down strike in the plant. Later on, several of them left, and by Saturday the number inside the plant was said to have been reduced to about 71 persons. During this time, however, Kelvinator office employes and executives had been going to and from the administration building as usual.

On the night of Monday, Feb. 8, the sit-downers ejected from the plant some 35 "fire insurance inspectors," who had been hired by the company to patrol the entrances from the plant to the main executive offices and office quarters, and took full possession.

Strikers jammed chairs into the revolving door at the front entrance, and were said to have welded shut the side doors to the administration building.

When office workers and executives came to work Tuesday morning, strikers holding the plant and picketers outside prevented them from entering the building. Police did not attempt to force a way through the lines for company officials, and one office worker who tried to break through was forced back.

On Tuesday afternoon of last week, a company offer to hold a parley with the strikers was voted down by the strikers, because they said conditions made in the offer barred Matthew Smith, secretary and organizer for MESA, from participation.

Workers at the Fort St. plant of Kelvinator, in which service and repair work is done, the same afternoon voted down a proposal to join the strike, but Organizer Smith was said to have stated:

"It don't make any difference; we'll close the plant up tomorrow anyway."

When service plant workers appeared for work on Wednesday, however, they were met by a number of union picketers. No violence ensued when several workers passed through the picket lines and into the plant, but E. A. Siebert, Kelvinator service manager, shortly afterward ordered the men to leave the plant and return to their homes.

On the same day Kelvinator, through Attorney Alex J. Groesbeck, sought an injunction to oust the sit-downers from the Plymouth Road plant, and Circuit Judge Henry G. Nicol issued an order to strikers' attorneys and officers of MESA to appear before him Thursday afternoon at 2 o'clock to show cause why the injunction should not be issued.

On Thursday morning, 50 Kelvinator service plant workers were escorted into the plant by police, after strikers had chained a rear gate. There was no disorder as the workers passed through a picket line of about 20 union men at the front entrance.

Service Manager Siebert said the men were needed to fill special service orders from the flood area, and that it was necessary to keep this unit operating. Office workers also were allowed entrance without trouble.

KELVINATOR'S STATEMENT

Kelvinator's side of the strike was contained in a statement issued Thursday which read, in part:

"Because of the extraordinary situation that confronts the 2,000,000 people of the Detroit area as a result of happenings at the Kelvinator plant on Plymouth Road, Kelvinator states the facts of the situation to the people of the city.

"Kelvinator employs over 3,000 men and women in the Detroit area at its Plymouth Road plant. Twenty-five hundred are factory workers; about 500 are engaged in office work. Counting their families, about 15,000 people in the Detroit area are directly dependent on this one plant. Its payrolls and purchases add millions of dollars a year to the prosperity of Detroit and the country.

"For 23 years, Kelvinator has been an important contributing factor to the diffusion of wealth in this territory. For that reason, it believes that the people of Detroit should have before them all the facts that led up to Kelvinator asking for an injunction to evict 71 sit-downers, who illegally hold its Plymouth Road plant and office building containing $8,500,000 collateral paper, personal papers and letters of executives, company records, cash in safe, orders and the like, and who are holding up the continuity of production and activity affecting the welfare of thousands of Detroiters and tens of thousands throughout the world—purveyors of raw material from Pennsylvania to Oregon, distributors, dealers, salesmen, and others.

EMPLOYE RELATIONS GOOD

"The relationship between management and men has always been a happy one. There has never been a shut down of production due to labor trouble in the last 23 years. Our factory workers' average wage at this plant in December, compared with figures issued by the Michigan Department of Labor and Industry, was higher than wages for similar work in companies of similar manufacture in Wayne county. Our relations with our workers have been conducted through a works council. There has never been any discrimination for or against a union man.

"On Tuesday, Feb. 2, about 12:30 p.m., a demonstration took place of about 100 men in our assembly plant, demanding that the workers strike. This was a followup on a demand from a group of workers, apparently banded together in a union, who had presented demands for recognition as the sole collective bargaining agency for the 2,500 factory workers of the Plymouth Road plant.

"Rather than risk strife the other workers went home. A sit-down by approximately 112 workers out of 2,500 was initiated Tuesday. This petered out to about 71 men on last Saturday night.

"The management, from Tuesday to Saturday, expressed a willingness to negotiate with its own men for any grievances, as had always been the customary procedure. It was unwilling to accept as a voice of spokesmanship for its 2,500 workers a man and a group which, both as to number and makeup, could not in its opinion speak for these 2,500 workers.

EJECTION OF GUARDS

"On Monday night, about 35 guards who had been engaged to patrol the entrances from the plant to the main executive offices and office quarters of the company, where the company records are, were ejected by the sit-downers. On Tuesday morning, office workers found themselves locked out by the sit-downers. The entrance to the office building was said to have been welded by the sit-downers. The 71 sit-downers were in full possession of these quarters.

"Such illegal occupancy has now been maintained since 11:00 p.m. Monday night, a period of 60 hours. Entrance has been forcibly prevented to office workers and executives. The office building is now in a state of siege. A complete cessation of activities has resulted through this illegal occupancy. Five hundred office workers and 2,500 factory workers are unable to work. Eight and a half million dollars of collateral paper is in possession of the sit-downers. Personal papers and letters of executives, the safe containing cash, confidential records of all kinds are in possession of these 71 illegal occupants.

"Records indicating the part payment by over 100,000 users of refrigerators, involving title to them, are in these seized offices.

"Kelvinator regards itself as having no issue between itself and its workers. It is interested in carrying on its activities in the interests of all. The major issue just presented transcends all others in the situation. That is why Kelvinator has asked for the injunction, and the eviction of those who illegally occupy its property.

TROUBLE AT FORT ST. PLANT

After a half-hour's conference Thursday with Mr. Groesbeck, Maurice Sugar, attorney for the union, Mr. Smith, and other MESA officials, Judge Nicol adjourned the injunction hearing until Monday. Attorneys for the two parties met again Friday to discuss possibility of arbitration.

Trouble at the Fort St. plant began and ended Friday morning, when picketers refused to permit the 50 workers who had entered the plant Thursday to return for another day's labor. Police made an unsuccessful attempt to break up the picket line, but there were no arrests and no one was injured.

The dispute started, police said, when company officials objected to picketers marching on property adjoining the buildings, which belongs to the corporation. Picketers agreed to limit their marching to the sidewalk, and patrolmen withdrew.

In a second statement, issued Friday, Kelvinator reiterated its stand in the strike situation, as follows:

"Hundreds of personal and telephone calls from both office and factory workers, eager to go to work and who have been locked out of Kelvinator's Plymouth Road plant by 71 sit-downers, were received by the management today. The company was obliged to tell them that it was willing to grant their request, but that the unlawful occupancy of the plant and office quarters by the sit-downers prevented this for the time being.

"In the meantime, in temporary quarters in the city, officials of the treasurer's department were reconstructing payroll lists of employes on the road and elsewhere, and dispatching checks to organization members in other parts of the country. The 71 sit-downers are in possession of the books and records of the company. Five hundred office workers have been locked out by the sit-downers since Tuesday, when the entrance to the office building was barred by the sit-downers. Twenty-five hundred factory workers have been shut out from the plant by the sit-downers since Feb. 2.

"Kelvinator has asked for an injunction to evict the 71 sit-downers,

(*Concluded on Page 15, Column 1*)

ANY DEALER WHO MUST SELL THE MOTOR AS WELL AS THE REFRIGERATOR WASTES TIME

HE doesn't have to do this extra work if the refrigerators he sells are equipped with G-E motors. When prospects are told that General Electric makes the motor, they take the high-quality of the electric equipment for granted, because General Electric's high standards of quality need no explanation.

And that isn't all. A G-E motor adds another high-quality feature to the sales appeal of his refrigerators and helps him sell. Thus, with selling easier, he has more time to prepare the way for future sales by showing prospects how they can save money by refrigerating food the modern way—with electricity. General Electric, Dept. 6A-201, Schenectady, N. Y.

DO YOU KNOW

That less than two decades ago the electric bill was a lighting bill only? Very, few electric refrigerators were used. Householders had to be taught their benefits and economies. General Electric, by its sales promotion, radio-broadcasting, and advertising, played a vital part in this educational program. It helped build a market for the electric refrigerators you sell.

HIGH-QUALITY FEATURES OF G-E MOTORS

Indestructible Rotor—
A one-piece pressure casting with permanent operating characteristics. No soldered or welded connections—inherently well balanced.

Rubber Mounting—
Springy rings of live rubber isolate motor vibrations. This quiet, cushioned power appeals to any prospect.

Automatic Belt-tightener Base—
Automatically maintains just enough tension to prevent slipping—reduces belt and bearing wear.

Protected Windings—
A special treatment thoroughly bonds the windings and protects them from moisture, heat, and mild acids and alkalis.

LET G-E MOTORS HELP YOU SELL

070-167

GENERAL ELECTRIC

COPPER TUBING

for AIR CONDITIONING

The neatest, quickest leakproof installation demands Wolverine Copper Tubing with wrought fittings (any make you choose—Wolverine fits them all). Wolverine Copper Tubing made to Government and A.S.T.M. Specifications.

Your jobber can supply you.

WOLVERINE TUBE CO.
1411 Central Avenue
DETROIT, MICHIGAN

Just look at it!

Is it any wonder that dealers say... "It's the greatest 'self-seller' on the market... and the program back of it gets them in front of a Leonard."

LEONARD REFRIGERATOR WITH THE *Master Dial*

LEONARD, DIVISION OF NASH-KELVINATOR CORPORATION • DETROIT, MICHIGAN

New Ice Cube Release, Flexibility of Interior Arrangement Featured in Frigidaire's 14-Model 1937 Line

(*Concluded from Page 1, Column 1*)
defrosting switch (manual set, automatic reset) are located on the front of the evaporator.

Refrigerant flows through all ways of the "super-duty" evaporator. Every ice tray is on a freezer shelf.

Frigidaire explains its claim to a 9-way adjustable interior in the following manner:

1. Two-way frozen storage compartment. The two bottom trays in the two-tray width evaporator can be used either for chops, fish etc.; or the four bottom trays can be removed, and fowl or packaged frozen goods can be stored in this area.

2. Two-way cold storage tray. This tray, under the evaporator, can be placed in two positions, one affording more depth then the other.

3. Three-way sliding shelf. This has an upper position, for storing shallow articles; a middle position, for averaged-sized articles; and a lower position, giving added space for bulky foods.

Food safety indicator is incorporated into emblem on 1937 Frigidaires.

4. Two-way multi-storage section. In the Deluxe models this is a rearrangement of the portable utility shelf and hydrators in such a way as to provide a deep-depth storage space in the bottom of the cabinet. In the Master models the same thing is accomplished through an adjustment of the single hydrator and lower shelf.

Deluxe models have the double hydrator, portable utility shelf, full-width sliding shelves, and bottle space on both sides of the evaporator.

Master models have one hydrator, and do not have the portable utility shelf.

The Imperial model has additional features in the form of a five-piece revolving glass dish set, and a water cooler.

Deluxe models are finished in porcelain inside and out. Master models have a Dulux exterior, porcelain interior. Interior construction is one-piece, seamless porcelain.

Key Specifications for 1937 Frigidaire Line

Model	Capacity (Cu. Ft.)*	Shelf Area (Sq. Ft.)*	No. of Trays	Ice Cubes	Lbs. of Ice	—Exterior Dimensions— Height	Width	Depth†
Imperial 37	13.5	29.5	8	144	19	64¾‡	38⅛	31⅝
Deluxe 8-37	8.25	19.3	6	108	14	60¼	32¼	27½
Deluxe 7-37	7.2	15.8	6	84	12	59¼	31⅛	25
Deluxe 6-37	6.2	14.0	6	84	10	58¼	29¾	25⅜
Deluxe 5-37	5.1	10.7	4	64	8	54½	28	25⅜
Master 8-37	8.25	19.3	6	108	14	60¼	32¼	27½
Master 7-37	7.2	15.8	6	84	12	59¼	31⅛	25
Master 6-37	6.2	14.0	6	84	10	58¼	29¾	25⅜
Master 5-37	5.1	10.7	4	64	8	54½	28	25⅜
Master 4-37	4.1	8.9	3	48	6	50¼	24¼	25⅜

*In accordance with standards established by Nema. †Overall depth includes door, hardware, and space at rear for ventilation. ‡With gliders, 67 inches with casters.

National Advertising Campaign to Break March 7

Frigidaire's 1937 advertising campaign will break nationally March 7 when the first of a series of national advertisements will be published in magazines and key daily newspapers coast to coast, declares L. A. Clark, household advertising and promotion manager.

The national magazine list includes **McCall's, Woman's Home Companion, Good Housekeeping, American Home, Better Homes and Gardens, Household, Holland's, Collier's, Cosmopolitan, American, True Story, National Geographic, Time, Liberty** and **Electricity on the Farm.**

Sunday supplement schedules include This Week and American Weekly.

The newspaper list consists of 189 daily papers in 179 key cities, plus cooperative advertising placed direct by dealers, department and furniture stores and utilities.

The space schedules are such that every marketing center, large or small, will be blanketed. The remainder of the advertising effort includes Frigidaire "motionizer" window displays, outdoor posters, literature, display room panels and banners and many other promotional pieces developed to focus attention on the product as a whole or on major features.

Theme of the 1937 advertising, which will be inaugurated with double trucks in magazines and four color pages in Sunday supplements, is "1937 Super-duty Frigidaire with the meter-miser." Subheadings are "Cuts current costs amazingly," and "Proves thrilling advance in all five basic services for complete home refrigeration."

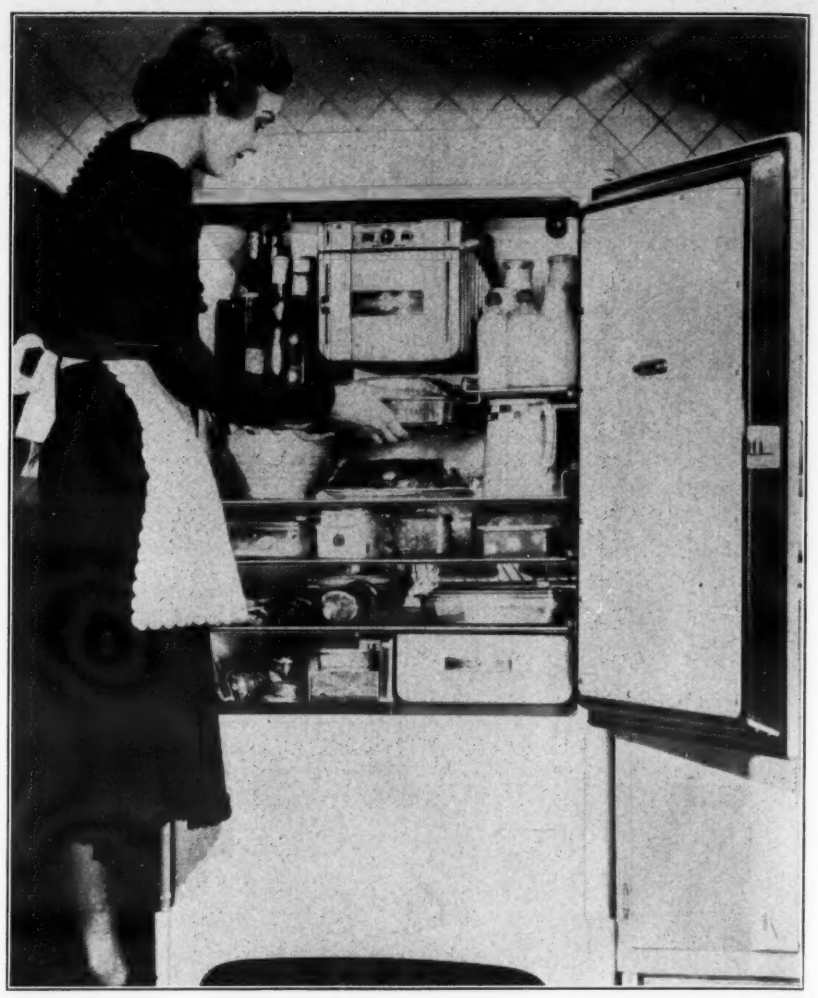
The proof theme employed in 1936, is continued with emphasis on "five basic proofs"—(1) greater ice-ability, (2) greater storage-ability, (3) greater protect-ability, (4) greater depend-ability, and (5) greater save-ability.

"The major newspaper advertising schedule includes 78 more newspapers this year than last and our plans for cooperative advertising have been forecast on the same scale," Mr. Clark stated.

Frigidaire's new "motionizer" window displays are intriguing. Electric fans as a means of power for action are done away with and a simple adjustment makes a dozen different motions possible.

The first of the new display is the instant cube release in motion. It shows the handle being raised, the grids and cubes coming out of the tray, and the cubes sliding free of the grids.

Frigidaire's '9-Way Interior'



Frigidaire claims a 9-way adjustable interior in its 1937 models, including a two-way frozen storage compartment, two-way cold storage tray, three-way sliding shelf, and two-way multi-storage section. Each of these is explained in the accompanying story.

Cubes in a Jiffy

Operating the instant-cube release, featured in all the new Frigidaire models.

Howe Opens New Store In Midland, Mich.

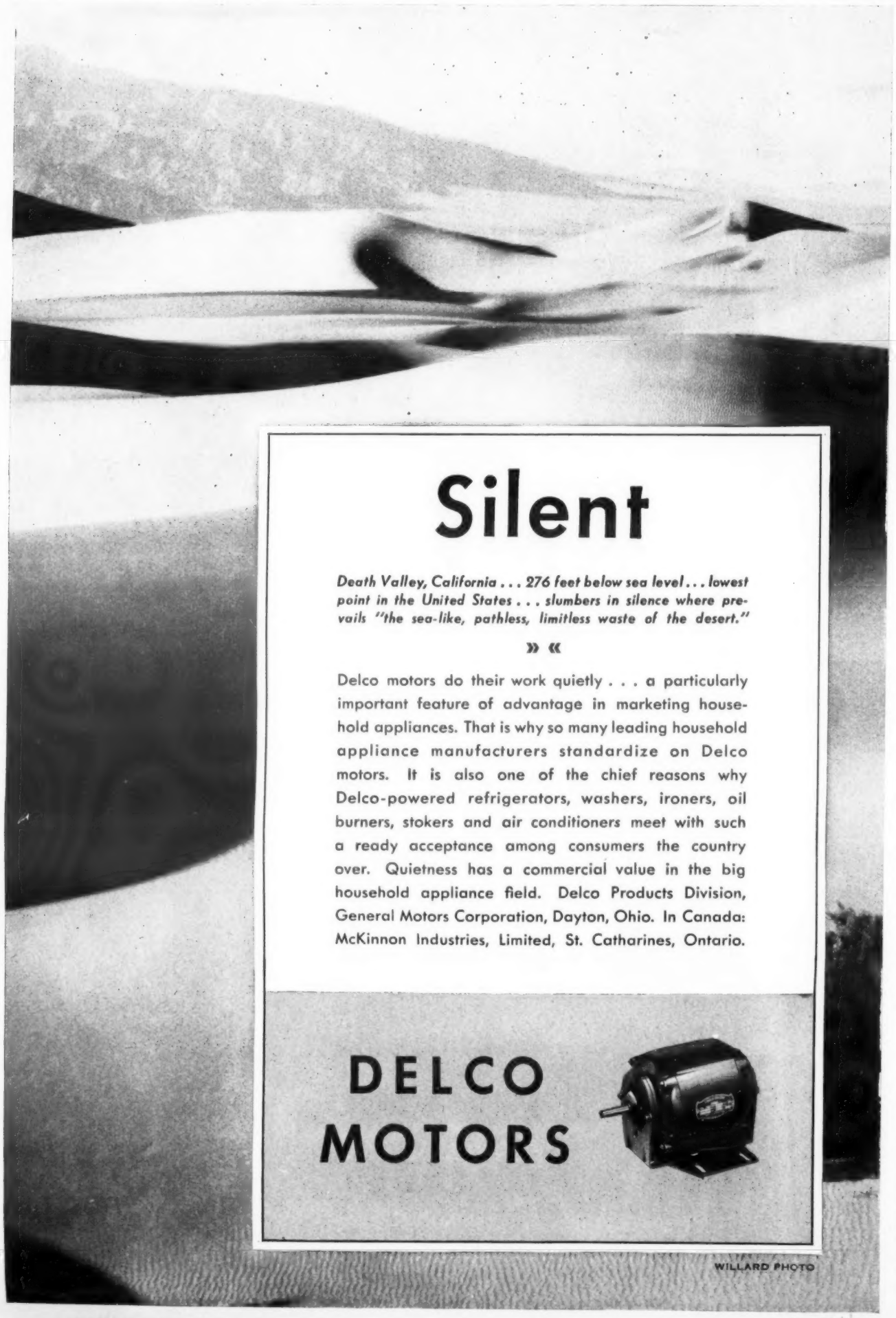
MIDLAND, Mich.—The Howe Co. which operates retail electrical stores in Bay City, Mich., has opened a retail unit here. Appliances carried include Leonard refrigerators, ABC washers and ironers.

B. K. Pond, formerly of Saginaw, is manager of the new store. W. L. Johnson and D. A. Small complete the staff. Lynn Howe is the owner.

Kaough Host to 125 Dealers At Sales Meeting

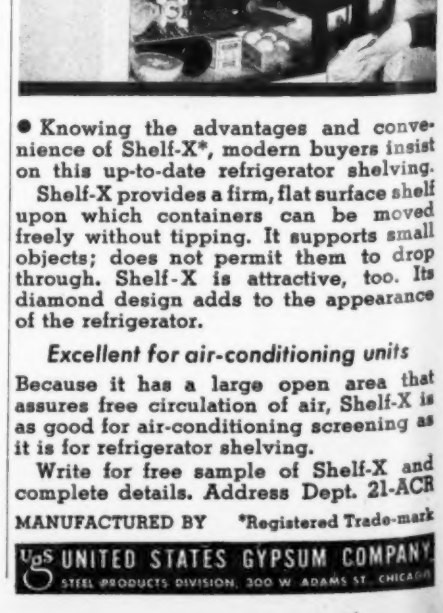
FT. WAYNE, Ind.—The R. M. Kaough Co., Crosley distributor, was host to 125 dealers at a sales meeting held here Feb. 10.

Australian refrigeration manufacturer desires to contact firms or individuals prepared to negotiate manufacturing franchise for Australasia air-cooled continuous kerosene-operated refrigerator. Address E. HALLSTROM First National Bank, Chicago.


Silent
Death Valley, California . . . 276 feet below sea level . . . lowest point in the United States . . . slumbers in silence where prevails "the sea-like, pathless, limitless waste of the desert."
» «
Delco motors do their work quietly . . . a particularly important feature of advantage in marketing household appliances. That is why so many leading household appliance manufacturers standardize on Delco motors. It is also one of the chief reasons why Delco-powered refrigerators, washers, ironers, oil burners, stokers and air conditioners meet with such a ready acceptance among consumers the country over. Quietness has a commercial value in the big household appliance field. Delco Products Division, General Motors Corporation, Dayton, Ohio. In Canada: McKinnon Industries, Limited, St. Catharines, Ontario.
DELCO MOTORS
WILLARD PHOTO

A free sample of SHELF-X will show you why . . .

MODERN REFRIGERATOR BUYERS DEMAND SHELF-X SHELVING



● Knowing the advantages and convenience of Shelf-X*, modern buyers insist on this up-to-date refrigerator shelving.

Shelf-X provides a firm, flat surface shelf upon which containers can be moved freely without tipping. It supports small objects; does not permit them to drop through. Shelf-X is attractive, too. Its diamond design adds to the appearance of the refrigerator.

Excellent for air-conditioning units

Because it has a large open area that assures free circulation of air, Shelf-X is as good for air-conditioning screening as it is for refrigerator shelving.

Write for free sample of Shelf-X and complete details. Address Dept. 21-ACR

MANUFACTURED BY *Registered Trade-mark

USG UNITED STATES GYPSUM COMPANY
STEEL PRODUCTS DIVISION, 300 W. ADAMS ST., CHICAGO

NEW General Electric *Triple-Thrift* Refrigerators offer the greatest buy in 10 years. Dealers and public have been quick to recognize this. Carloads of G-E Refrigerators are now rolling out of the factories every day. A solid trainload to San Francisco . . . 60 carloads to Chicago . . . 45 to Boston . . . 35 to Newark . . . 22 to Charlotte . . . 15 to Nashville. So it goes the country over!

15 NEW GENERAL ELECTRIC MODELS . . . with a new schedule of lower prices . . . have opened up big new markets for General Electric dealers —and *at a profit!* See for yourself!

REMEMBER! The General Electric Refrigerator is the leader of *a complete line* of G-E electrical home appliances that has greatest public preference. The sale of one General Electric appliance leads to other sales—General Electric dealers have more customers—more sales—more profits! General Electric Company, Section DF-2, Nela Park, Cleveland, Ohio.

New *Triple-Thrift* Refrigerators are priced lower, use less current, last longer. Time-tested mechanism has greatest performance record.

AND REMEMBER, General Electric has had more experience with sealed units than any other manufacturer.

ALSO A COMPLETE LINE OF WATER COOLERS, BEVERAGE COOLERS, MILK COOLERS AND COMMERCIAL REFRIGERATION EQUIPMENT FOR *EVERY* PURPOSE

it's a GE year!

-they're buying 'em one a minute!!

Utilities Get 10% Of Domestic Sales

NEW YORK CITY—Of 1,956,327 household electric refrigerators sold in the first 11 months of 1936, approximately 90% were sold by non-utility outlets, according to the annual Statistical Bulletin of Edison Electric Institute, released last week by C. W. Kellogg, president of the organization.

Refrigerator sales were cited by the Institute to show the effect of national promotional efforts, such as the "Better Light-Better Sight," "Electrical Housewares," and "Kitchen Modernizing" campaigns, on bringing appliances through pioneering stages to the period of public acceptance.

Dealers other than utilities sold more than $452,000,000 worth of merchandise in 1935, about 85% of the total of such sales, the Bulletin reported.

More than 26,100,000 customers are now receiving electric service, the Bulletin points out. This represents an increase of nearly 800,000 customers during the year, and a gain of 6,000,000 since 1926, when the Institute begun gathering statistical information on a national scale. Of the new customers for 1936, about 96,000 were farms.

It is estimated that 915,000 farms were supplied with electricity at the end of 1936, or about 14% of all farms having occupied dwellings and 21% of all farms having dwellings valued at more than $500.

All classes of the industry's customers purchased 15.3% more electricity in 1936 than in 1935, but paid only 7.7% more for their service than in the preceding 12 months, the Bulletin reveals.

Total sales of power to all ultimate consumers for 1936 amounted to 89,500,000,000 kwh., compared with 77,596,025,000 kwh. in 1935, an increase of 11,903,975,000 kwh. Residential users took 14,900,000,000 kwh., or 16⅔% of the total, and agricultural service 2 billion kwh.

Annual residential use of electricity per customer in 1936 was 719 kwh., 7% above the 669 kwh. consumed by these customers in 1935, the Bulletin states. Annual revenue per kilowatt-hour for residential use was 4.69 cents, a decrease of 6% from the 4.99 cents average for 1935.

Revenue per kilowatt-hour for all classes of service in 1936 was 2.30 cents, compared with 2.46 cents in 1935, a decrease of 6.5%, the Bulletin statistics reveal.

Spokane Norge Distributor Holds 3-Day Meeting

SPOKANE — Brown-Johnson Co., Norge distributor, recently conducted a three-day dealer sales meeting in its showrooms, S123 Wall St. Lee O. Cox, Norge northwest division manager, was in charge.

New Leonard Distributor Appointed in Knoxville

KNOXVILLE, Tenn.—The Maytag Appliance Corp., 516 Union Ave., has been appointed distributor of Leonard electric refrigerators in the eastern Tennessee territory. The firm will operate a retail outlet in addition to its wholesale business.

Westinghouse Office Building Dedicated

MANSFIELD — Dedication of the new $1,000,000 warehouse and office building of Westinghouse Electric & Mfg. Co. here, and the customary Westinghouse "Family Day," recently were celebrated as a joint activity.

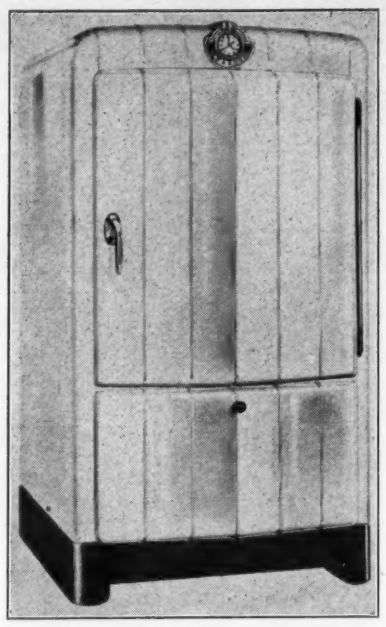
The new seven-story, triangular building has a welded steel framework. Construction was begun at the apex of the triangle, and gradually proceeded to the base.

Although actually seven stories high, the building contains only five floors, as the lower floors have ceilings high enough to permit storage of ranges and refrigerators. The fifth floor houses the private offices, main offices, display rooms, photographic laboratory, and other merchandising departments. This entire floor is air-conditioned by 125 tons of Westinghouse equipment.

Observance of Family Day is an established Westinghouse institution, although an innovation at the Mansfield plant. Merchandise displays, factory trips, laboratory inspections, special engineering exhibits and hobby contests were among the many features arranged for the benefit of Westinghouse employes and their families. Westinghouse appliances were awarded to those whose hobby or handicraft displays were judged the most interesting.

One of the huge Pennsylvania locomotives electrified by Westinghouse was on display. The Kiltie band from the company's East Pittsburgh works took part in the entertainment program.

With the 'Enchanted Clock'



Model D-617 in the 1937 line of Sparton household refrigerators, showing the new cabinet styling, and the defrosting clock.

New Spartons Have Vertical Beading, Ridged Fronts

(*Concluded from Page 1, Column 3*)

that all Deluxe features except the clock may be added to Standard models at the owner's option—and the clock itself is available as an extra accessory item.

Several changes have been made in the 1937 Sparton's exterior, designed by Onnie Mankki. Streamlining has been accentuated, and the cabinet front is crossed with vertical beads which accent the door's vertical position. The door itself is wider, and hinges have been tied together with a chromium plated tube, giving a long vertical line to match the door beading.

Face of the door, as well as of the Vegabin storage drawer beneath it, has been slanted to a ridge in the center, adding to the cabinet's appearance as well as providing additional room for the Baskador inside the door itself. The Vegabin, or any storage compartment, has three sections in this year's model.

The "Enchanted Clock" is die-cast, and has a plastic nameplate attached. Dial is of silver, equipped with a second-hand. The clock may be set to defrost the refrigerator at a regular hour each day, after which normal operation is resumed automatically.

Hardware is of the satin chrome type, with door latch of the push-pull type. Hinges are tipped in ebony, as are the clock, the Vegabin, and the nameplate. Red or green trim is also available, to match colors in the kitchen. Finish on all models is "Spar-lac" lacquer.

Interior of all cabinets is porcelain, with rounded corners for easy cleaning. Shelf arrangement has been revised to permit additional storage and increase "front" space. All models have fast-freezing shelves, and ample ice-cube capacity is claimed, through addition of double depth trays in several models. A wide range of freezing speeds is provided through a new 12-position cold control.

Exterior of the freezing compartment is of anodized alumenite, and the evaporator is enclosed, directing the air to the upper sections of the food storage compartment for complete circulation. Interiors of all Deluxe models are illuminated.

The Thrifter, built onto the food compartment door, is fitted with six glass containers, with black tops, for storage of loose items often used by the housewife. The Dualid crisper in Deluxe models is of glass, with a two-section cover affording clear visibility of its contents.

Defrost tray is extra deep, for storage of meats and foods requiring colder than normal temperatures. Some Deluxe models are also equipped with a defrost tray cover, usable as a serving tray.

Cabinets are of all-steel one-piece construction, and are rust-proofed throughout. Balsam Wool insulation is used. The dry expansion system of refrigeration is used in all models. Compressor is of the reciprocating type, and the motor is equipped with a terminal overload relay to guard against line surges or voltage variations. Oiling is automatic, and the unit is mounted in rubber for quiet operation.

Niagara Frontier League Elects New Officers

BUFFALO—H. I. Sackett, Tonawanda, president and general manager of the H. I. Sackett Electric Co., has been elected president of the Electrical League of the Niagara Frontier. He succeeds Karr Parker.

Other new officers are: Edward F. Strong and George J. Reichert, vice presidents; Richard Wahle, secretary-treasurer; Karl L. Thielscher, executive committeeman; and Samuel S. Vineberg, manager-secretary.

The organization includes electrical appliance dealers of the Buffalo area.

QUESTIONS & ANSWERS ABOUT THE RED BOOK

The 1937 Master Catalog of Air Conditioning and Refrigeration Products

Q.—Can you furnish lists of refrigeration distributors, dealers and service companies?

A.—We do not sell mailing lists at present, although we have made occasional mailings from our office for regular advertisers. A great demand has grown up recently for some efficient method of distributing catalog material to the various classifications of buyers and we have worked out a very complete program for a "1937 Master Catalog of Refrigeration Equipment, Accessories, Materials, Parts, Supplies, and Tools" (The Red Book).

The Deluxe Edition of this book will be ready for distribution in March and we suggest that you take advantage of this opportunity to present your products to this list of 5,000 key names which will include leading manufacturers, distributors, jobbers, dealers, and other large buyers. The Deluxe Edition will be sent only to *active buyers* who have made specific *request* for the book.

Q.—How will the complete 50,000 copies be distributed so as to cover the market?

A.—To begin with, we are now in the midst of the most extensive direct mail subscription campaign which we have ever undertaken. For a long time we have been compiling and checking lists. Expensive tabulating equipment has been installed and a complete system has been worked out for rapid handling of thousands of names so that they may be classified, checked for duplicates, etc. Last year, we used over a million cards in making our records.

Late in 1936 we mailed out 50,000 small catalogs describing the NEWS and the various books of The Refrigeration Library. At this writing, we are mailing out 25,000 more. New lists are being secured and checked and additional large quantities of promotion literature will be mailed until we have thoroughly covered all potential markets for refrigeration and air-conditioning products.

Thus, Business News Publishing Co. is doing a *master mailing list* job for the entire industry, by compiling and testing out all names and addresses, so that it will be unnecessary for each individual company to bear the expense of locating the large number of new buyers who have come into the field.

Q.—Why are you providing this service?

The basic purpose of the 1937 Master Catalog (Red Book) is to provide the customer with a permanently bound collection of manufacturers' literature neatly arranged and properly indexed.

The service offered by Business News Publishing Co. is chiefly that of the compilation, classification and maintenance of the mailing list, furnishing the covers, binding and indexing, and the distribution of the literature on an economical basis. As independent publishers we are providing *the connecting link* between those seeking new and *additional sales outlets* and those looking for new and better *sources of supply.*

In addition to the obvious advantages of this arrangement, extensive publicity is being given to the Master Catalog throughout the industry. This book will be an object of special attention and with such practical value that it will be carefully preserved.

The Master Catalog will be divided into about eight major sections and each section will be identified by a tabbed index insert of heavy cover stock. The patented metal ring binding will also make each page of the book a separate insert. The book may be opened to lie flat at any page. Complete catalogs, booklets, or leaflets may be inserted by merely punching the series of small holes to fit the metal rings. Special rates will be quoted on such material which may be of any size up to 8½ x 11 in.

Q.—May we insert a return post card?

Mechanically the book is designed so that it will take care of a great variety of material. To a limited extent actual samples of material may be bound in the book. Return postcards and other special devices, which are not acceptable under post office regulations for a second-class mail publication, may be included in the Master Catalog since it will be shipped by parcel post or express.

Provision is made for printing single page advertisements on standard stock of good quality (70 lb. weight) but advertisers are advised to furnish their own inserts, leaflets, and booklets since the main object of the plan has been to provide the *distribution* service which has been so much in demand.

The advertising rates have been based upon the cost of furnishing the heavy board covers and metal binding, carton, label, and postage. In other words, the principal items of expense are those involved in the binding and *distribution* of the books, rather than in the editing and printing of text matter.

Instead of using the usual type of advertisement to *offer* a catalog or booklet, the purpose of the Red Book is to provide the actual catalog since the distribution will be made only to active buyers who have made specific request for it.

Key Specifications of 1937 Sparton Models

Model	Capacity (Cu. Ft.)	Shelf Area (Sq. Ft.)	No of Trays	Ice Cubes	Lbs. of Ice	—Exterior Dimensions— Height	Width	Depth
D-467	4.6	8.5	2	42	4.1	54¼	24¼	24¾
D-617*	6.2	14.1	2	84	8.5	57¾	27¼	28¾
D-747	7.2	16.11	4	106	11	57¾	30¾	28¾
D-947	9.0	20.5	5	134	14	57¾	37¾	29¼
S-747	7.2	16.11	4	112	11	57½	30¾	28¾
S-617	6.2	14.1	2	84	8.5	57½	27¼	28¾
S-467	4.6	8.5	2	42	4.11	54¼	24¼	24¾

*Model D-617, without automatic defrosting system and clock, is available as model TV-617.

STEWART WARNER uses
SYLPHON
BELLOWS
for Crankshaft Seals
For maximum durability — refrigerator manufacturers logically turned to metal —not only for principal structural members, but to replace troublesome wearing, leaking, or deteriorating parts, small in size but vital in importance to satisfactory service — free operation.
The Sylphon Bellows—a seamless, jointless "miracle in metal" has solved many such problems for refrigerator manufacturers by supplying the durability of metal while providing necessary flexibility for use where metal has never before been applicable.
The Sylphon Bellows is the product of over 35 years of experience—its satisfactory use is insured by a knowledge of Bellows properties and application which is unexcelled. This knowledge and experience is available to you for the asking. Ask for Bulletin DO-121.
SYLPHON BELLOWS
Sylphon
SEAMLESS METAL BELLOWS AND THERMOSTAT ASSEMBLIES
FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

Milwaukee Dealers Draw On Utility's Salesmen

MILWAUKEE — Milwaukee electrical appliance dealers may draw upon a supplementary sales force of 38 men and women to assist them in reaching the sales quota for 1937, it was announced at the annual meeting of the Electrical League of Milwaukee here Feb. 10. The force is employed by the Milwaukee Electric Co., in cooperation with the league.

This year's quota has been set at $6,250,000, 25% above the $5,000,000 business done by local dealers in 1936. Five hundred dealers attended the meeting.

A. E. Schanuel Joins Gardner Staff

ST. LOUIS—A. E. Schanuel, formerly vice president of the Hart Vance Co., has just joined the Gardner Advertising Co., according to a recent announcement by E. A. W. Schulenburg.

During the past seven years Mr. Schanuel has directed promotional campaigns on electric refrigerators, ranges, air conditioning, and gas heating for the Union Electric Light & Power Co.; the St. Louis County Gas Co.; the Mississippi River Fuel Co., St. Louis; The Peoples Gas & Coke Co., Chicago; and Rex Cole, Inc., New York City.

In his new position, Mr. Schanuel's activities will cover market development work in the home appliance and home-modernization fields, in connection with the Gardner Experimental Kitchens here.

Marshall Field Discontinues Suburban Appliance Depts.

CHICAGO—Marshall Field & Co. department store has discontinued handling major electrical appliances in its Evanston and Oak Park branch stores, it was announced last week.

Reasons for the decision, it was understood, were: (1) insufficient space in which to make effective displays in the branch stores, and (2) duplication of effort, due to appliance customers' habit of shopping at the main store before purchasing at the branches.

N. R. D. G. A. Report Will Cover Refrigerators

NEW YORK CITY—The 1936 merchandising and operating report on department store activities, now being gathered by the Controller's Congress of National Retail Dry Goods Association, will include a special department for "mechanical refrigeration" and another for "other major household appliances." Last report covered all major appliances under one heading.

With the expansion in home furnishing sales, stores are requesting more specific information on the various divisions in appliance sales, it was explained.

Milwaukee Distributor For Leonard Moves

MILWAUKEE—Taylor Electric Co., distributor of Leonard refrigerators and RCA Victor radios here, will move its entire operations to the new quarters on the first floor and basement of the building located at North Broadway and East Erie St. sometime this month, reports J. A. Taylor, president.

In its new location the firm will have approximately 12,000 sq. ft. of floor space for display and warehouse purposes—double that which it has in its present location.

The company will have its own dockage space in its new location.

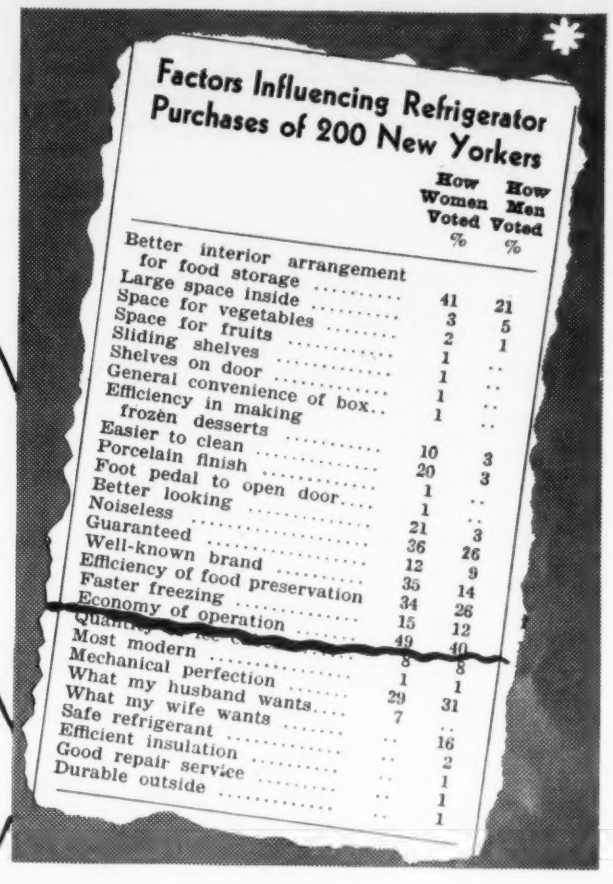
Westinghouse To Shift Pittsburgh Offices

PITTSBURGH—To facilitate operations, Westinghouse Electric & Mfg. Co. will move its Pittsburgh office, and some of its general offices now located in East Pittsburgh, to new quarters in the Union National Bank building. The move will be made about May 1.

Occupying nine floors of the building, the new offices will house the Pittsburgh district office, subsidiary district offices, and headquarters offices, including executive, legal, industrial relations, sales, and accounting departments.

Hartford Dealer Moves To 'Appliance Belt'

HARTFORD, Conn.—Albert Radio & Appliance Corp., handling Norge, Hotpoint, General Electric and Apex refrigerators, will move its store about Mar. 1 from 154 to 234 Asylum St., where larger space is available in the heart of the "appliance belt." Homer S. Albert is manager of the store, a branch of the Albert Radio & Appliance Corp. in Springfield, Mass. Benjamin Albert of Springfield is president.


Factors Influencing Refrigerator Purchases of 200 New Yorkers
How Women Voted %
How Men Voted %
Better interior arrangement for food storage 41 21
Large space inside 3 5
Space for vegetables 2 1
Space for fruits 1 ..
Sliding shelves 1 ..
Shelves on door 1 ..
General convenience of box.. 1 ..
Efficiency in making frozen desserts 10 3
Easier to clean 20 3
Porcelain finish 1 ..
Foot pedal to open door.... 1 ..
Better looking 21 3
Noiseless 36 26
Guaranteed 12 9
Well-known brand 35 14
Efficiency of food preservation 34 26
Faster freezing 15 12
Economy of operation 49 40
Most modern 8 8
Mechanical perfection 1 1
What my husband wants.... 29 31
What my wife wants 7 ..
Safe refrigerant .. 16
Efficient insulation .. 2
Good repair service .. 1
Durable outside .. 1

Half OF YOUR REFRIGERATOR PROSPECTS demand Economy of Operation!

*REPRODUCTION FROM AIR CONDITIONING AND REFRIGERATION NEWS OF JANUARY 27, 1937

Almost every other home on Main Street, New York and Simmons' Corners, U. S. A., is managed on the "Penny-Watching Plan." Their owners demand the utmost in economy plus value in every piece of equipment, every stick of furniture that goes into their homes. You've heard this before, and it is conclusively proven again in an impartial survey conducted by Ohio State University for *McCall's Magazine*, and reported in Air Conditioning & Refrigeration News of January 27, 1937.

More than any other single feature, these Main Streeters are most interested in the Economy of Operation in the refrigerators they are about to buy. They can't afford the waste of high operating bills.

If you are fortunate enough to be selling a refrigerator with Dry-Zero Insulation, you will find it easy to open the golden gates of Main Street, because you can answer the BIG question in the minds of almost 50% of present day refrigerator buyers . . . "Will your refrigerator prove economical to run?"

You can point out that Dry-Zero Insulation is the only non-absorbing refrigerator insulation and, therefore, is the only one unaffected by the moisture that inevitably penetrates the walls of any refrigerator in use. That Dry-Zero Insulation lengthens the life of your refrigerator because it saves the unit from the abuse of increasingly longer periods of operation that would result if moisture-soaked insulation was in the walls. That because of these reasons, your refrigerator will cost from 20c to $2.00 less every month to operate.

To have this complete story, write for copies of an interesting folder, "How Dry-Zero Insulation in your refrigerator saves you money every month in cost of operation."

DRY-ZERO CORPORATION, 222 North Bank Drive, Chicago, Ill.
687 Broadview Ave., Toronto, Ontario.

DRY·ZERO
REG. U.S. PAT. OFF.
INSULATION
The Most Efficient Commercial Insulant Known

AROUND THE WORLD WITH GEORGE F. TAUBENECK

Articles in Editor George F. Taubeneck's "Around the World" series have appeared in the following issues of the NEWS:

Jan. 8, 1936—Detroit, Mich.; Jan. 15—Jackson, Mich., and Chicago, Ill.; Jan. 22—St. Louis, Mo.; Jan. 29—Claremore and Tulsa, Okla.

Feb. 5—Dallas, Tex.; Feb. 12—El Paso, Tex., and Juarez, Mexico; Feb. 19—Yuma, Globe, and Phoenix, Ariz.; Feb. 26—San Diego, Calif. (also California Pacific Exposition).

March 4—Los Angeles and Hollywood, Calif.; March 11 and 18—San Francisco, Calif.; March 25, April 1 and 8—Honolulu, Hawaii.

April 15—Pago Pago, Samoa, and Suva, Fiji Islands; April 22 and 29—Auckland, New Zealand.

May 6—Melbourne, Australia; May 13 and 20—Sydney, Australia; May 27—Brisbane and Townsville, Australia.

June 3—Shipboard (Sydney to Singapore), and Darwin, North Australia; June 10—Papua and New Guinea, and Soerabaya, Java; June 17—Bandoeng, Batavia, Semarang, Soerabaya, Solo, and Djocja, Java; June 24 and July 1—Singapore, Straits Settlements.

July 8—Penang, Straits Settlements, and Rangoon, Burma; July 15—Calcutta, India; July 22 and 29—Benares, Agra, Delhi, and Bombay, India.

Aug. 5—Suez Canal; Aden, Arabia; and Cairo, Egypt; Aug. 19 and 26—Tel-Aviv, Haifa, Jerusalem, and Jaffa, Palestine.

Sept. 9—Complete text of paper delivered at Seventh International Congress of Refrigeration, The Hague, Holland; Sept. 16 and 23—Colon and Barcelona, Spain, and Marseilles, France; Sept. 30—Malta.

Oct. 7, 14, 21, 28, and Nov. 4—Paris, France (including study of French quota system and survey of the French market).

Nov. 11, 18, and 25—Monte Carlo and Italy; Dec. 2—Rome; Dec. 9—Milan and Venice, Italy.

Dec. 16, 23, 30, Jan. 6, 13, and 20—Vienna, Austria, Lichtenstein, Budapest, and Hungary.

Jan. 27, Feb. 3 and 10—Switzerland and The Netherlands.

Taxes, Taxes

Naturally, a comprehensive social insurance scheme like that in operation in The Netherlands costs money. Somebody has to foot the bill for it. You're right: it's the taxpayer.

As my friend, Mr. Altes, put it: "You Americans haven't seen anything yet when it comes to taxes."

And at the risk of giving American politicians some pregnant ideas, the following incomplete list of Dutch taxes is offered just to give you an idea:

Capital tax (on *all* property, from shoes to shares), road tax, gasoline tax, graduated income tax, land tax, street tax, school tax (if your children go to school, you pay according to your income), servants tax (amounts to something like 20 dollars for each servant you employ), furniture tax, and rent tax (if you own your own house, you pay tax on its rental value).

All this results in some very complicated bookkeeping. An employer has to provide cards for each employe, and buy stamps weekly to place thereon—to pay for the old age and unemployment insurance. But that's simple, compared to the calculations and records which must be kept by the government.

* * *

Education

Education is expensive in The Netherlands. From the population of 8,000,000 persons is extracted close to 200 million dollars annually to support both state and religious schools. The latter are subsidized; and, with both Catholic and Protestant schools in addition to public schools, tend to make for duplication of facilities.

For his money, however, the Dutch taxpayer has the satisfaction of knowing that the nation's younger generation is getting a marvelous schooling. The average Dutch boy or girl shows an aptitude for and facility with other languages which is amazing to most products of the American educational system.

Secondary schools are of three types: Burgher day-and-evening trade schools; Higher Burgher schools, offering nonclassical and scientific courses of study; and the Gymnasia, in which only classical subjects are taught.

For higher education there are five public universities, one private university, and several special schools and colleges. The public universities are the State institutions at Utrecht, Leyden, and Groningen, the municipal university at Amsterdam, and the Calvinistic Free University, also at Amsterdam.

The five schools maintained by each are classified as the colleges of theology, law, medicine, mathematics and physics, and literature. In the Free University there is no faculty for medicine.

At Delft there is a special Technical College for engineers and technologists; a private Commercial Academy has been built at Rotterdam, and in Utrecht there is a Veterinary College. In the town of Wageningen on the banks of the Rhine, a few miles from Arnhem, is the Dutch Agricultural Academy.

Since the close of the World War there have come into existence a number of Dutch correspondence schools, which are highly accredited.

The increase in the demand for knowledge is also evidenced by the fact that public libraries in The Netherlands have become so much more frequented in the last few years that many new ones have been built in the larger communities.

* * *

Dutch Charity

Ever since the earliest days of the formation of the Dutch nation, it has been a Dutch characteristic to help out fellow-countrymen as much as possible. No doubt this feeling of benevolence resulted from the necessity for cooperation in keeping back the ever-threatening waters.

In many towns there are centuries-old hospitals, almshouses, and benevolent societies giving assistance to the destitute.

Official State poor relief is regulated by an act passed by the Dutch legislature in 1854, and revised in 1870 and later years. Statistics reveal that there are in The Netherlands about 6,000 officially recognized charitable institutions.

Over 80% of the relief cases are attended to by public and denominational establishments, the remainder being taken care of by private charities.

There is a sufficient number of hospitals, sanatoria, and asylums for the mentally ill, and they are quite satisfactory and efficient almost without exception. There is a special institute for the blind in Amsterdam, and in Rotterdam and Groningen there are institutes for the deaf and dumb.

* * *

Slum Clearance

A somewhat different form of poor relief is the Dutch campaign for slum clearance. Based on the theory that improper tenants are the cause of slums just as much as slums are the cause of degenerative tenants, the Dutch method calls for human clearance as well as property clearance.

The plan is to house slum dwellers of the undesirable type in clean, comfortable, temporary homes, keep them under observation, and train them to become fit tenants for modern, permanent dwellings.

Inhabitants of the slums are classified either as mere vagrants and despondent people or as physical and mental degenerates. The latter are placed in hospitals and asylums; the former, being subject to the Poor Law, are permitted to enter the "reconstruction settlements" if they so desire.

A typical settlement suitable for study is that established just outside The Hague. It has been built out in "the sticks" in order to ensure a degree of isolation, and also to obtain plenty of fresh air and sunshine. Open meadows stretch out on one side of the little community.

There are enough houses to take care of 120 families, and they are divided into three grades. The first grade homes are around the outer edges of the settlement, and are inhabited by the least troublesome of the ex-slum dwellers.

Rules, regulations, and restrictions in first-class homes are neither numerous nor severe, and the inhabitants enjoy almost as much liberty as ordinary Dutch citizens. They certainly enjoy better living conditions than they ever knew before.

Inside the ring of first-class homes lies the circle of second grade dwellings, each of which has a little garden plot. A high wall separates the second-class section from the first, and another wall, also high, divides the second and third-grade circles.

The purpose of the walls, as is easily surmised, is to discourage surreptitious exits and entrances on the part of the inhabitants. Barbed wire on top of the walls adds further discouragement.

The third-class houses are laid out in spider-web fashion. All streets radiate from a central hub in which is an elevated observation room from which the "governess" in charge of the third-grade tenants is able to see what is happening in every street at all hours of the day and night. Switches on her desk control floodlights in every street.

From these arrangements, one would gather that the tenants of the third-class homes are the "bad boys and girls." They have less liberty than either of the other two grades, and are more carefully watched and tended. They must be in their homes by 9 o'clock at night in the winter and 10 o'clock in the summer, and they must enter and leave their section through guarded archways.

Families are quite large in the settlement, averaging from six to 12 members apiece. Upon entrance to the community, every person is bathed thoroughly and swabbed with disinfectant, and his, or her, clothing is fumigated. The houses are cleaned and the furniture fumigated before new tenants move in.

Membership in the community is voluntary, but a weekly rent is charged, the amount decreasing from first-class to third. Tenants appear to be quite happy, and they are permitted to visit outlying districts if they wish. There are shops and churches on the premises.

When tenants have improved sufficiently in their domestic habits and in their moral and physical standards,

(*Concluded on Page 10, Column 1*)

The Fleet's In

Daring and dauntless, the hardy Dutch acquired an empire through seamanship. This is just a fishing fleet anchored off the little town of Volendam; but it is facing out to sea, just as Hollanders have done for generations.

Life Goes on in Easy Tempo Among Netherlands Villagers

(1) Editor Taubeneck is boxed in by three Old Salts who want to know just what are his intentions with that trick camera. (2) No mechanical doll this—just the first steps of a lovely little lady. (3) "And how do you like us, mister? Is the countryside as pretty back in America?" Dutch children learn to speak English in the public schools.

West Penn Power Sets Up Kitchens to Train Dealers

PITTSBURGH—Installation of laboratory kitchens to be used as training and testing centers has been completed by West Penn Power Co. in its Connellsville, Greensburgh, Ridgway, Uniontown, and central offices.

Utility activities which will be conducted in the laboratory kitchens include training schools for home service workers, cooking and demonstration classes for dealer and company range salesman and employes, testing work on appliances, and food and recipe testing.

The Pittsburgh laboratory kitchen which has been completed contains a typical model kitchen where foods and recipes will be tested, and a section containing a number of ranges which is to be used for cooking school classes.

Ted Peters Opens Own Store in Grand Rapids

GRAND RAPIDS, Mich.—Ted J. Peters, for several years connected with the factory sales departments of electrical appliance manufacturers in Chicago, has taken over the State Distributing Co. here and on Feb. 5 opened a new Frigidaire downtown retail store.

Thor washers and ironers are now handled by the distributing firm, and Mr. Peters plans to add other lines to his retail store as rapidly as establishment of a sales force will permit.

Arthur Weick Opens New Marketing Service

CHICAGO—Arthur C. Weick, for eight years market analyst for Henri, Hurst & McDonald advertising agency, has resigned to start a new market analysis service, to be known as A. C. Weick Co., at 20 West Jackson Blvd.

Universal Cooler Awarded Plant Safety Trophy

DETROIT—Universal Cooler Corp. has been awarded the A. C. Marshall trophy for showing the best improvement in safety records among Detroit plants during 1936. The award was made by the Detroit Industrial Safety Council.

— WHAT DEALERS ARE SAYING & DOING —

Akron Dealers Find Trained, Specialty Salesmen Best Means of Meeting Low-Priced Competition

BY ROSSITER HUNTINGTON POTTER

Polsky Salesmen Study Units on Assembly Line

The A. C. Polsky Co. "est. 1886" is probably Akron's most modern department store. The refrigeration setup runs along the northeast corner of the first floor. C. H. Trueman heads major appliances—his experience selling ranges goes back 18 years which, he admits, just about covers the history of electric refrigeration.

Mr. Trueman trains his men through the factory into active service. He sends them through the production and assembly lines until each man knows the replacement parts of a refrigerator, how it should be installed and approximately how much it should cost.

"Every one of our men can sell his box from the ground up," he emphasized. "It puts authority into his sales talk, confidence in his own product that a prospect has to be aware of before he can have any confidence in it."

Six men cover the floor, he explained; three in the morning and three in the afternoon. The men that are off can follow prospect leads from the floor.

"And we get a lot of them—almost more than enough," he smiled. "I believe that everything possible should be done to invite people into the store and to make it easy for them to find what they want they get here.

"But we don't go out and chase them in. I know personally of too many instances where people have called up dealers and asked if they had to be subjected incessantly to this high-pressure cold canvassing. It's an imposition upon them."

That same policy is observed on the floor, Mr. Trueman assured us. His salesmen are trained to go through every make they handle, point for point, and draw out every favorable comparison — thorough acquaintance with their product has proved the best attack against competition, he averred.

Against mail order houses he advises and uses the same principle.

"Beat them at their own game," he repeated. "We have the Akron franchise for the Allied line, a refrigerator that stands up favorably against Sears or any other mail-order house. The 6.31-cu. ft. model sells for $139.50. The box is made by Kelvinator, the unit by Universal Cooler, porcelain finish, and it holds a 5-year guarantee."

Using the user is a strong link in department store policy—it has to be, the appliance head explained. It begins with courteous treatment in the store, and continues on through after the box is sold.

"Our salesmen always drop in to check up on the refrigerator's smoothness, temperature, running speed," he recounted. "Our service department operates 24 hours a day. Three men handle it the year round; in summer we have to double that number.

"Our master mechanic is a crackerjack. He's a young fellow, but he's been through every refrigerator factory in this part of the country. We even sent him through a year at Ohio State," he chuckled, "just to have him get the swing of it."

Newspaper advertising is their steady medium, Mr. Trueman revealed; it gives steady results.

"An institution like this has to use at least one invariable medium of public communication," he clinched his point. "People watch the department stores every day of the week for sales and for bargain counters. We never vary our position in the papers. It's always there."

Direct mail is used only occasionally, to step up special activities. Circulars used to be good; that was two years ago or more, the appliance department manager added with a touch of irony.

"Now every corner drugstore sends them out by the handful—almost faster than the housewife can dump them. If I had $100 to spend on advertising in my own way I'd use it on newspaper layouts every time."

Kitchen tie-ins are becoming more and more significant, he finds.

"We had a complete electric kitchen, right over here," he indicated. "We took it down just before you came in; the whole setup is going to be featured on the second floor. We need more room, and the spring season's almost here.

"It's going to be twice as big as our avenue on this floor—which we're still going to keep up as a sort of introductory scene. There'll still be a salesman here on the job; people are used to looking for refrigerators in this corner. But upstairs we're planning a display that will knock your eye out."

At this moment a young man came up. "Everything's ready for you, Mr. Trueman."

"I'll be right there," the appliance head acknowledged. Turning, he explained that he was starting for Cleveland to catch the last part of the Frigidaire convention. He then turned us over to F. M. Henderson, his sales manager and assistant buyer, and with a parting wave of his hand, disappeared.

"Sales so far this year are right up with last year," Mr. Henderson judged thoughtfully. "The strike has slowed us just a little. You know a good part of Akron is floating population. When factories here begin production they advertise in the Southern papers, and in they come. When the season's over they pick up and go again.

"Not that they make much difference in refrigeration sales," he conceded; "they don't stay in one place long enough. It's the year-round workers, the steady citizens, that make the city. But these others have their part in it, and when they get excited over anything like the strike their influence is bound to make itself felt in the general buying.

"You can sense the difference, talking to them," he said. "Even though the salesman is supposed to do most of the talking, he has to be sensitive to the moods of the customer, or he isn't a good salesman.

You get the feel of that kind of difference when you're selling consistently to both men and women, the sales manager illustrated.

"When you're selling a refrigerator to a woman it's only natural to emphasise courtesy and convenience. If a man comes in it's usually the mechanics he's interested in. Men are much more apt to wave aside the politeness and get down to brass tacks.

"Lots of them like to argue the point. Not losing their tempers, necessarily, but they like to put up contrary statements and make you back down.

What can you do with them, we asked him.

"Well, there's no use arguing, anyway. If he backs you down you're apt to lose the sale—you haven't put your point across. And if you win the argument maybe it rubs him the wrong way." He shrugged his shoulders. "It doesn't pay to argue either way.

"After all, the manufacturers pay their shop experts fifteen to twenty thousand a year to make the machinery in this unit as perfect as possible. If you can put that point across to them in the right way they'll accept it and there's nothing left to argue about."

Ohio Edison Follows Factory Plans & Policies Closely

Industrial changes and readjustments, national disasters like the flood, all are soon felt on the refrigeration market, said Divisional Merchandising Manager Tschumi of the Ohio Edison Co., Akron office.

"It isn't hard to see why," he added. "Industrial delay always means less buying power. You can feel it all the sooner after a catastrophe like the flood; people here and everywhere else pitch in and help, even when it means giving up the things they've been planning on for months. Refrigeration feels it; so does every business.

"So far as our refrigeration doings go," he continued, "the utility stands both as distributor and dealer. George Longwell is general merchandising manager; he handles distribution into Akron, Springfield, and Youngstown. I take care of dealer activities in Akron.

"You see, the utility doesn't act as a competitive dealer in the strictest sense of the word. We're interested in increasing the line load; it's immaterial who sells the appliance to the people.

"Of course, our men do try to sell wherever they can. But they're specialty salesmen; they have to stick to their one line in season and out. I work on the theory that anyone who believes in his product and is willing to face the poorest outlook to prove it, can sell. We try to fill in territories beyond the regular dealers, not to compete with them on their own ground."

In selling and promotion plans the

(*Concluded on Page 11, Column 1*)

This is YOUR Advertising

At Copeland's busy factory headquarters in Detroit today, complete local newspaper schedules are ready for every active Copeland Distributor and Dealer.

It is Copeland's aim to reach every possible buyer of household refrigerators, as well as every possible buyer of commercial refrigeration — through your newspapers, through great national magazines such as the SATURDAY EVENING POST and TIME, and through the various trade publications covering the commercial field.

Yes—Copeland Distributors and Dealers will enjoy greatly multiplied profits this year, for *everything* — the product, the prices, the finance arrangements and the advertising—is in perfect tune.

You do not need a big bank roll to handle Copeland, for our new floor finance plan puts more importance on your reputation than on your net worth. Act *now*, before the heavy selling season just ahead. Write J. D. McLeod, General Sales Manager, the Copeland Refrigeration Corporation.

COPELAND

REFRIGERATION CORPORATION, DETROIT, MICH.

A DALLAS E. WINSLOW INDUSTRY

PIONEER MANUFACTURERS OF REFRIGERATION

Stop That!

Her dignity affronted by the presumptuousness of the strange cameraman, Little Miss Marken stands rigidly resenting.

(*Concluded from Page 8, Column 5*)
they are free to leave the community and take up normal life in society.

Chief disappointment connected with the "controlled dwelling" plan is that employers are loathe to hire men and women who live or have lived in the communities. There seems to be a social stigma attached to them because they have been in the settlements.

This, say my informants, is both unfortunate and unnecessary. Prior to their training in the colonies these people were usually poverty-stricken, run-down, and burdens on their communities. After their training they are capable of becoming solid citizens.

* * *

Zuider Zee Diked

One of the most amazing engineering conquests of modern times has been performed in Holland with the locking of the Zuider Zee by a series of dikes, creating a lake called the Ijselmeer, the first step in adding about 7% to the country's land area by artificial means.

While still incomplete, about 48,000 acres of land have been reclaimed by land-locking the Zuider Zee and pumping out millions of gallons of water, making fertile farm lands of what was formerly the ocean floor. Fields of rye, grain, and flowers are now seen where once were harbors, and often a sunken boat can be seen amid crops on the former lake bed.

Eventually the Dutch hope to reclaim some half million acres from the old Zuider Zee, adding about 10% to the country's *cultivated* area. Dredging and pumping off of water is still going on, with the prospect of several years work before the project will be completed. When finished, 300,000 people will be able to make a livelihood on the bed of what was once a great lake.

On June 14, 1918, the plan was sanctioned by the Dutch legislature, and from then until 1927, when actual work was begun, an engineering staff headed by Dr. C. Leely, who originated the plan, made preparations. The result was a Public Work of great magniture, providing employment for thousands during the depression.

By the end of 1930, the smaller northwest polder, known as Wieringermeer, had been completely diked in and drained. A wall of mud and clay stretching for 20 miles across the Zee was completed on May 28, 1932, thus shutting out the North Sea and forming of the Zuider Zee an enclosed lake, now called the Yssel.

The embankment has since been built up into a wide, substantial dam.

Meanwhile, the reclamation work on the other three polders, the northeast, southwest, and southeast, continues, and it is expected that in the 1950's the land that is now emerging from the water will be dotted with farms and covered with rich, abundant crops.

* * *

Larvae to Cats

Many problems have arisen in connection with this great enterprise; some have been solved, others have not.

Perhaps the most important of the unsolved dilemmas is the question of what to do with and for the hundreds of fishermen who are being left high and dry.

One difficulty that has been met was the prevention of washouts in Wieringermeer. The soft mud that lay on the newly reclaimed sea bed was being washed away by the currents near the discharging sluices To conserve this rich soil huge brushwood mattresses were constructed and laid over it.

A tedious job was the clearing of the new land of its thick sea shells preparatory to ploughing. When the ploughing was in progress, it was by no means unusual for a workman to unearth part of the skeleton of an ancient vessel that had sunk in the Zuider Zee several hundred years ago.

In recent months, the regions around the shores of Lake Yssel, the ex-Zuider Zee, have been pestered by multitudes of little midges. Since the water of the lake is still brackish, fresh-water fish cannot live in it, and inasmuch as such fish feed on the larvae of the midges, absence of the fish has permitted the midges to breed by the millions.

Unharmful in themselves, the insects create a hazard to motoring as they swarm in thick clouds over the countryside. They also make life for the Dutch extremely miserable by feeding on leaves and vegetation, and by settling in thick layers on the outer walls of houses.

In the wake of these midges has come an invading army of spiders, to whose palates the insects are very tasteful. If the course of nature runs true, an aerial attack by droves of spider-devouring wasps will follow, and in pursuit of the wasps will come squadrons of birds to satiate their appetites. (Great big fleas have little fleas upon their backs to bite 'em; little fleas have lesser fleas and so on ad infinitum.)

In the end, it is hoped that the Dutch cats will emerge victorious.

* * *

Government

In The Netherlands one may see that royalty and democracy can form a harmonious combination. The Dutch are very fond of their royal family, and show them all the respect due to so unassuming and benevolent a ruling house. And pay them well (Queen Wilhelmina is probably the richest woman in the world). At the same time, the Dutch are firmly adherent to their form of self-government.

It is a constitutional Monarchy, with more power vested in the crown than the English allow. Even so, the queen has much less authority than an American president—including those before Roosevelt II.

Morning in the Low Lands

Old Holland is to be found in the villages, not the booming cities. This peaceful idyll, recorded by the editor's camera near Volendam, demonstrates the scrubbed neatness and order of life among the Dutch people.

The national legislature is the States General, consisting of the First Chamber, (upper house), and the Second Chamber (lower house). The former is composed of 50 members elected by the Provincial States, representative bodies in the 11 provinces, for terms of six years.

Half the members retire every three years, making for a gradual change in the political constituency of the First Chamber. The legislative power of this body is a check on the actions of the lower assembly.

A hundred members make up the Second Chamber, which is presided over by a President appointed by the sovereign. The representatives are elected by the people in a general vote, and their term of office lasts for four years. This popular assemblage convenes to transact all national legislative matters and to draw up proposed statutory measures, the latter being forwarded to the First Chamber for approval.

There is a cabinet made up of nine ministers selected by the sovereign. The various departments of which the ministers are in charge are finance, justice, foreign affairs, interior, defense, public works, public instruction, trade and agriculture, industry and labor, and colonies.

As an advisory board to the Crown on measures of current debate, the State Council comprises 14 men chosen by the sovereign.

Exercising maintenance authority over the polderland, the territory lying below sea-level, is a separate body known as the Waterstaat, or Water Conservancy Board. Its duty is to see that residents of the lowlands participate in the work of keeping back the ever-threatening water.

In each of the 11 provinces of The Netherlands, namely Zeeland, North Brabant, Limburg, South Holland, North Holland, Utrecht, Gelderland, Overijsell, Drenthe, Friesland, and Groningen, the legislative body is the Provincial States, popularly elected and presided over by a Crown-appointed Commissary.

Further subdivisions are the 1,100 communes, either urban or rural districts, in each of which the voting public elects a Communal Council for a six-year session, the nominal head of the group being a burgomaster appointed by the sovereign.

It was only recently that Dutch women were granted the voting privilege, although women had been eligible for election to the Second Chamber for a good many years.

* * *

Judicial Organization

In The Netherlands, the judiciary is composed of four types of courts. There are the district courts, numbering over 100 and taking care of the less important civil cases; the divisional courts, one in the principal towns of each of the 21 divisions and attending to matters of greater importance; five high courts of justice serving as appeal courts for decisions of the divisional courts; and at the top of the entire system the Supreme Court of The Netherlands, situated at The Hague and functioning principally as the last court of appeal.

The divisional courts are also courts of appeal for decisions of the district courts.

The Dutch Army and Navy have a separate system of courts to settle their legal controversies.

The Netherlands is also the home of a number of international courts, all of them being in the Peace Palace at The Hague. They are the Permanent Court of International Justice, the Permanent Court of Arbitration, the Academy of International Law, and the International Academy of Comparative Law.

The United States of America is practically the only nation of consequence in the world which does not "adhere" to these "World Courts."

* * *

National Defense

In the matter of international relationship during times of diplomatic strain and imminent hostility, the policy of the Dutch is one of strict neutrality. Their philosophy seems to be based on a wise, old Indian adage, "No stickum out head, no ketchum axe on neck."

The armed forces maintained by the Dutch government are intended for use only in case of attack. Their duty is to try to preserve Dutch neutrality and to defend their countrymen from hostile invaders. Part of the navy is stationed in the colonies as a police power to preserve law and order and as a defense unit in the event of foreign assault.

Since Japan has been casting about for suitable land, the Dutch naval force in the Netherlands East Indies has been increasingly on the alert.

The peace strength of the army totals about 295,000 men and includes the field army, the infantry, the artillery, the cavalry, the air force, the medical service, the royal constabulary force, and the voluntary militia.

Administration of army affairs is under the control of the Department of Defense, headed by the minister of the department.

The kingdom is divided into four military sections, with a commander in each of the headquarters at The Hague, Arnhem, Breda, and Amersfoort. For conscription there are 12 districts.

* * *

Neat Trick

A relentless foe in times of peace, the inland waters of The Netherlands are ready to be transformed into an invaluable ally in times of war. A system of sluices has been scientifically arranged so that large areas can quickly be flooded to impede the advance of any possible invading army.

The main eastern line of flood defense is a strip of land running south from the Zuider Zee for about 80 miles and having an average width of seven and a half miles. Although it would be inundated to a depth of only two or three feet, this area contains many canals and catch basins spaced every 100 yards or so which have a depth sufficient to engulf even Primo Carnera.

Forming a wide semi-circle that stretches from the Zuider Zee at a point just south of Amsterdam, to the North Sea west of The Hague, is the second line of flood defense.

The home base of the navy is Helder, situated at the northermost tip of the province of North Holland. Administration of both army and navy is conducted by the Department of Defense.

Fisherfolk Dress for Comfort, and Achieve Picturesque Style

Those wooden shoes, they will tell you, are really as comfortable as the baggy pants and perched caps. There's room for toes to wiggle in those big clumpers.

Sears Discontinues Its Park Ave. Showroom

NEW YORK CITY—Sears, Roebuck & Co. last Wednesday discontinued its Park Ave. and 59th St. showroom, and opened a newly organized apartment house sales division on the main floor of its office building at 360 West 31st St.

Directing the new division is Sterling A. Warren, who had been manager of the Park Ave. store since its opening in March, 1935. The organization will promote specially designed Coldspot and electric range models among purchasing agents and buyers of apartment house equipment.

Apartment house division headquarters, comprising about 1,600 sq. ft. of floor area, were redecorated prior to their occupancy by the new department.

Sears' Park Ave. showroom was in the nature of an experiment intended to give the company's products prestige as well as leads for appliance sales in the metropolitan area. Similar showrooms in large cities throughout the country would be established if the scheme proved successful, it was said.

Wilson Distributing Co. Handles Apex in Miami

CLEVELAND — Apex Rotarex Corp. recently appointed the Wilson Distributing Co., 1632 N. W. 10th St., Miami, Fla., and D. W. Smith, Merryville, La., to distribute its line of domestic electric refrigerators, reports J. F. Stephens, advertising manager.

E. H. Campbell Joins Staff Of Jam Handy

DETROIT—E. Hamilton Campbell, formerly advertising and sales promotion manager of Rex Cole, Inc., New York distributor of General Electric refrigerators, has joined the Jam Handy Picture Service, Inc. in an executive sales capacity, it was announced by Jamison Handy, president of the company.

Stewart-Warner Appoints Four Distributors

CHICAGO—Stewart-Warner Corp. has announced the appointment of four new distributors to handle both radio and refrigeration lines.

The Dietz Distributing Co., 626 Broadway, Cincinnati, will cover that territory for Stewart-Warner. The company has branch offices in both Cincinnati and Dayton.

The Kane Co., 1006 Webster Ave., has been appointed distributor in the Cleveland territory, and will also maintain a branch operation in Columbus, Ohio.

The Alemite Co. of San Antonio, 550 Fifth St., has taken over distribution in the south-central Texas territory.

The Indiana Distributing Co. of 1040 North Meridian St., Indianapolis, will cover the central Indiana territory.

Kelvinator Names 3 to Assist Campbell Wood

DETROIT — Robert E. Barnes, George M. Jensen, and Fred Hulburd have been appointed special assistants to Campbell Wood, recently appointed director of public utilities for Kelvinator Division, Nash-Kelvinator Corp.

Mr. Barnes, long experienced in the utility field, has been associated with Monongahela West Penn Power Co. and Edison Electric Institute.

Mr. Jensen is a graduate of Carnegie Institute of Technology and has spent most of his professional life in furthering the use of electrical service in the home through his association with various companies in the household appliance field.

"The enlarged activity of the public utilities division," Mr. Wood stated, "will make constructive and cooperative assistance available to executives of management and operating companies for the solution of their specific problems affecting the extension of the use electrical service.

"In addition to the general office in Detroit," he explained, "the division will maintain offices in Chicago and New York."

"We have a close filing system for them to work from," he rejoined, "and for each solid prospect from that list we expect them to smoke out two of their own."

The Reliable Co. holds premium sales several times a year, the president added; not only to turn over their stock but to maintain goodwill. A kitchen set of matched pans or baking dishes usually is the complement.

Any direct policy of using the user is discouraged.

"Most of our refrigeration sales come through our radio and furniture contacts," Mr. Peters explained. "Our cold canvassing season adds its consistent quota. We don't find offering a bonus to users desirable or necessary."

KITCHEN IDEA MOVING

The electric kitchen idea is moving ahead, but slowly, he reported. With the stores range of home products he has found grouping of allied appliances a distinct asset in presenting a solid front, but on the other hand that it's hard to tell just how much one appliance helps another.

"You find the same sort of thing using radio," he illustrated. "We use newspaper spreads consistently, and direct mail when there's an unusual bargain display here in the store. We can see the result in the number of people that come in and ask to see it. And we use radio spots the year round; but radio doesn't give the same picture a newspaper ad does, or the figures we can put down in bold face on a mailing piece.

"They don't see the ad as it comes over the radio. It's just a voice, carrying an idea. And if months from now a housewife wants a refrigerator and the name 'Reliable' comes to mind we get the sale; but she isn't able to say what suggested it. Radio does its job in the long run, but you can't prove it by adding up a day's column of figures."

It's for that same reason, the president concluded, that you can't judge just how effective a complete kitchen setup is. The Westinghouse group display centers the refrigerator corner on the floor, he nodded, but how many sales of individual appliances it's responsible for nobody knows.

Price cutting in the Akron territory hasn't been any great problem to the Reliable Co.

"Of course we're up against close competition with the utility and with Sears," Mr. Peters shrugged, "but there haven't been any wars over it. Sears has a big pull among the Southerners here—folks from Virginia, Tennessee, Georgia. Down there Sears is well known. And when they come north they bring their catalogs with them.

SELLING QUALITY

"For us, when it comes to straight competition I'll take the quality in a good box against any cheaper brand in a mail-order line.

"The utility gets us a little nearer home. They have two advantages: the first is service. Their linemen are on call 24 hours a day. We aren't.

"The other point is their departmental setup. Refrigeration with them of course is a subordinate line along with the other appliances; they're interested first of all in their power load. If their floor manager can show a general profit at end of the month, that's all that's needed."

R. C. Hager Will Direct Tracy-Wells Dept.

COLUMBUS, Ohio—Election of R. C. "Bob" Hager to the general managership of the Tracy-Wells Co., appliance distributor, was announced last week by William P. Tracy, president of the organization.

Mr. Hager, vice president of Arnold Wholesale Corp., Cleveland branch of the organization, since 1930, will continue his work with that company, Mr. Tracy said. Distributing Leonard refrigerators, ABC washers, and Zenith radios, Arnold Wholesale Corp. has an organization of 500 dealers working in 18 northeastern Ohio counties.

The new general manager will also supervise operation of Appliance Distributing Co., a wholly-owned subsidiary of Tracy-Wells Co. distributing major appliances in 22 central Ohio counties. Assisting him in this work will be Nelson P. Wright, general manager, and B. A. Morgan, sales manager.

Officers of Arnold Wholesale, in addition to Mr. Hager, are: Mr. Tracy, president; Walter Custis, second vice president; F. Sheldon Bradford, treasurer and general manager; and Arthur G. Ridgley, director of sales.

Freeman Elected President Of Hughes-Peters Co.

COLUMBUS, Ohio — Frederick W. Freeman was named president of the Hughes-Peters Electric Corp. at a reorganization meeting of the firm held recently. The company is in the wholesale electric appliance field, specializing in refrigerators and radios, and parts for both.

Other officers of the firm are: R. M. DeWolf, vice president; Miss A. E. Hooper, secretary-treasurer; A. E. Lucks, general manager; and L. C. Freeman, William Maugan and R. M. Lucas, board members.

—PROFITABLE SALES METHODS—

Akron Dealers Direct Sales Efforts To Meet Local Market Problems

(Concluded from Page 9, Column 5)

utility follows Frigidaire policy all the way through.

"We don't see any reason to try anything else," substantiated the divisional manager. "It's always struck me as plain common sense that they know more about promotion than we could find out, experimenting on a small scale."

Looking ahead, Mr. Tschumi is optimistic. "It's midwinter now and things are low; they always are at this time of year. And because Akron is industrial we feel the strike perceptibly. But we're no worse off than we were last year at this time, and speaking for myself I know this year's going to be better than ever."

PETERS LETS EACH MAN WORK OUT OWN SALES FORMULA

The Reliable Furniture Co. is just up the street from the power company headquarters. Truscon, Gibson and Westinghouse refrigerators were displayed.

"We started in with Truscon in 1932, and added Gibson the next year," explained Marvin Peters, president of the company. "Westinghouse we took on just last year, 1936. We have territorial protection under Gibson; the other Gibson dealers in Akron work with us and follow our policies, and none are added to the line without our okay.

"Westinghouse of course is wide open as far as any exclusive rights are concerned, but they're good in sales displays and home economics demonstrations and the name is nationally known."

Reliable uses a permanent floor staff of 12 men, none of whom are restricted to selling any one appliance. They work on straight salary plus "spiffs" on larger sales, Mr. Peters outlined. The experience of handling so many men and selling so wide a range of merchandise has convinced him of this principle, he said: not to use any hard and fast routine of training; to let each man work out his own sales idea.

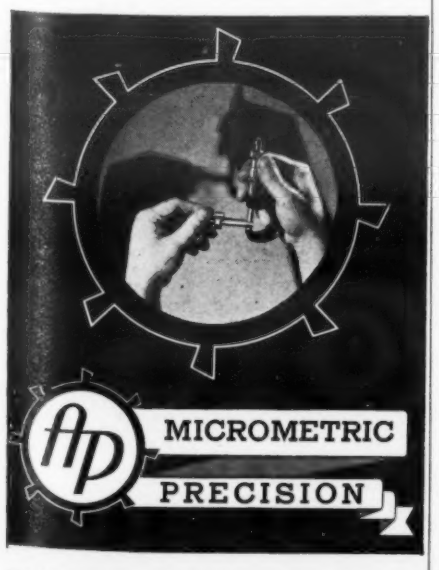
"Of course there are certain fundamentals they all learn," he admitted. "But they learn them in their own way. As far as technical instruction goes, I don't think you need it. One of my salesmen is a naturalized citizen who doesn't know beans about the inside of a radio. He sells himself instead, and the company and the radio right along with it.

"Mechanical perfection isn't any argument to give to a modern housewife, anyway. She figures—and she's right—that they're all pretty good mechanically. She judges by what she can see, right there in front of her."

And women still do most of the buying, no matter who pays for it, he stressed.

"That's why appearance and a variety of little conveniences—gadgets—still help a lot."

With the coming of spring season Mr. Peters adds 10 men to his staff, picked exclusively to cold canvass. They work on straight commission.

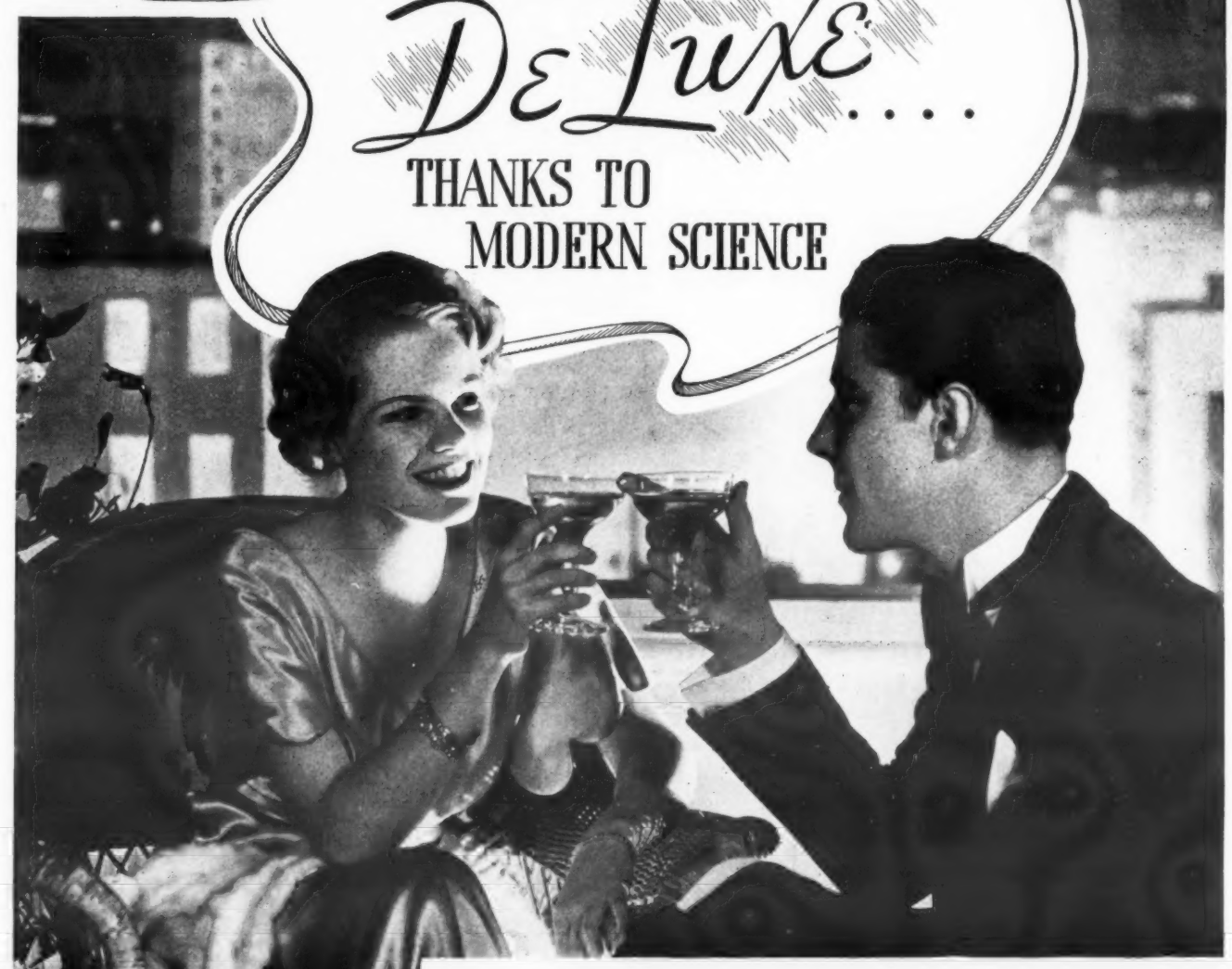


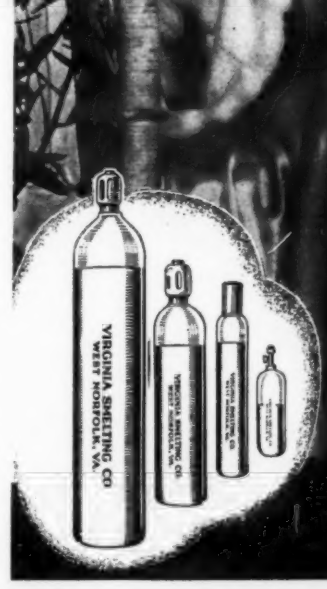
BUILT RIGHT from the INSIDE OUT

Each part of an A-P Expansion Valve is designed and built to produce a perfectly working unit. All working parts are easily removed for inspection and cleaning.

Automatic Products Company
2450 North 32nd St., Milwaukee, Wis.

COCKTAILS DE LUXE . . . . THANKS TO MODERN SCIENCE





. . . PRESENT-DAY people demand the modern wonders that science offers. The streamlined cars . . . the world-girdling radios . . . the flying "palaces" that skim so gracefully through the skies . . . *and* the wonders of automatic refrigeration.

EXTRA DRY ESOTOO and V-METH-L have played no small part in the development of this great industry. They answer the all-important need for a refrigerant that is clean, pure and *absolutely dry*. In addition, these fine products are available for immediate delivery from 72 distributing points here and abroad.

VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

Fogel Equipment Installed In Combination Market

PHILADELPHIA — Fogel Refrigerator Co. recently completed a commercial installation in a combination meat, grocery, and produce market which, according to Sales Manager Albert Fogel, is typical of many systems which the company has recently installed.

The equipment in the market consists of a 5x7x9-foot Fogel walk-in cooler with a 12-foot display case. A single compressor refrigerates both cooler and case. The back rack line-up covers the entire length of the wall of the meat department. The entire job is finished in porcelain.

WPA Will Build $150,000 Storage Plant in South

MERIDIAN, Miss.—A $150,000 cold-storage unit, largest plant of its kind in the state, will be constructed by WPA labor under the sponsorship of this city, according to city officials.

Produce House Storage Rooms Have Frigidaire Units

GOLDSBORO, N. C.—Four refrigerated storage rooms have been constructed within the large storage and handling building of Pate-Dawson Co., local wholesale fruit and produce firm.

To provide a maximum degree of flexibility and control, each room is equipped with a separate Frigidaire compressor unit located where it is readily accessible for servicing.

Floors, walls, and ceilings of all four rooms are insulated with two layers of 2-inch Armstrong corkboard. Three inch corkboard was used to insulate column webs. Wall finish is portland cement plaster, and Armstrong's Asphalt Plastic Finish was used on the ceilings.

In addition to regular cold storage door equipment, eight Cant-Stand-Open doors, and eight ventilator doors for 14x14-inch openings were used. These small doors were built on the job.

-COMMERCIAL REFRIGERATION-

300 Cold Storage Locker Systems In Use in Iowa

AMES, Iowa—Declaration that cold storage locker systems have proved their worth in Iowa and other mid-western states, and prediction that installation of similar systems should be made in large numbers in other sections of the country, was made here by Frank Smith, secretary of the Iowa association of locker owners and managers.

Since its start six years ago in Oregon, the plan of storing farm-killed meats by freezing has become a popular one, and there are now 1,500 plants scattered over the country, with the bulk concentrated in the middle west.

Following study of the plan from both the angle of the cooperatives and the system of furnishing a higher standard of living to farmers, Iowa state college extension officials have helped sponsor the building of the new plants in this state.

Most of the Iowa plants are equipped with about 300 lockers. There are about 300 plants in this state, and it is estimated that Iowa farmers and townspeople in the smaller centers save well over $3,000,000 yearly through the plan.

Success of the system since its inauguration assures its extension to other states on a large scale, furnishing a large field for refrigeration contractors.

Distributors Speak and Foremen Entertain At York Meeting

(*Concluded from Page 1, Column 3*)

small organization to the largest in the industry today.

Others on the program included: E. A. Kleinschmidt, vice president and treasurer; L. Williams, engineer-in-chief; S. H. Shipley, general works manager; C. A. Pearson, national commercial supervisor; J. L. Rosenmiller, sales promotion manager; and S. E. Lauer, vice president and general sales manager, who presided.

The second day's meeting was featured by an unusual banquet. This event was held in the Yorkco Foremen's Club room at the West York Plant, and was especially arranged and decorated for the occasion.

Entertainment was provided by the Yorkco orchestra, Lester K. Loucks, director, and the Yorkco chorus of 80 male voices under the direction of E. E. Schroeder. The personnel of these organizations are all employes of the York Ice Machinery Corp.; and the dinner, with prime roast York county turkey as the main dish, was prepared and served by members of the Yorkco Foremen's Club.

S. E. Lauer, vice president and general sales manager, presided as toastmaster. Seated at the speakers table besides Mr. Lauer were W. S. Shipley, president; E. A. Kleinschmidt, vice president and treasurer; L. Williams, engineer-in-chief; S. H. Shipley, general works manager; J. L. Rosenmiller, sales promotion manager; P. H. Glatfelter and G. F. Taubeneck, editor of AIR CONDITIONING AND REFRIGERATION NEWS, who, as guest speaker, was the only "outsider" present.

Talks were delivered by various executives of the corporation with responses by several of the distributors, including Thomas F. Harney, Thomas F. Harney & Sons, Worcester, Mass.; J. Morley Baker, Penn-York, Inc., Harrisburg, Pa.; Harry T. Blocker, Blocker Air Conditioning Corp., Newark; Richard Oeberst, Refrigeration Equipment & Service Co., Santa Rosa, Calif.; A. W. Whitten, Whitten Sales Co., Austin, Tex.; and John Trefts, K. W. Schantz, Inc., Buffalo.

Business sessions were led by C. A. Pearson, national commercial supervisor. Among the speakers on this program were F. E. Dennison, commercial machine development engineer, who talked on "'Freon-12' Condensing Unit Development"; Frank White, national service engineer, who spoke on "Installation and Service of York Equipment"; Phifer Smith of the Phifer Smith Co., Knoxville, Tenn., and J. J. Murphy, president, Maryland Refrigeration Co. of Baltimore, Md., who discussed "Distributor and York Branch Relations."

J. L. Rosenmiller, sales promotion manager, revealed to the convention the corporation's plans for 1937 sales promotion and advertising. Mr. Rosenmiller also made arrangements for and directed the entire convention program.

AT CONVENTION

Those present were:

Thomas F. Harney, Jr., Thos. F. Harney & Sons, Worcester, Mass.; Joseph Davis, J. P. Scanlon, and J. D. Trafts, Joseph Davis, Buffalo; R. D. Pike, E. R. Halpin, and Kendall Castle, Jr., Rochester Gas & Electric Co., Rochester, N. Y.

W. H. O'Brien, Edward Joy Co., Syracuse, N. Y.; Samuel Diamond, Morris Henry, Samuel Peris, and Clark F. Potter, Broome Distributing Co., Inc., Binghamton, N. Y.; Lawrence Davis, Automatic Oil Heating Co., Springfield, Mass.

F. K. Daggett, Jr., and Robert Brown, Connecticut Oil Heating Co., Hartford, Conn.; J. P. Fell, Jr., and Herman Kruger, Aird Don Co., Troy, N. Y.; H. T. Blocker, T. F. Byrne, J. W. Obereiter, and H. A. Sturges, Blocker Air Conditioning Corp., Newark.

Paul Hughes, Electric Products, Inc., Jersey City, N. J.; A. R. Roesch, B.O.R. Radio Co., Reading, Pa.; Edward G. Carpenter, Dan L. Brillhart, Paul D. Bodusel, and Philip Ruth, Careva Co., York, Pa.; Sheldon Gordon and A. F. Curlett, Jr., Sheldon Gordon, Wilmington, Del.

J. Clark, III, McCormick York Refrigerating Co., Williamsport, Pa.; R. H. Catlett, Richmond York Corp., Richmond, Va.; Geo. J. Bernasco, Tab Electric Supply Co., Trenton, N. J.; Harry W. Dashiell, Tidewater York Co., Norfolk, Va.

Frank T. Francis, Percy H. Erisman, Jr., Russell J. Bishop, W. R. Hartline, and Cyril B. Smith, Washington Refrigeration Co., Washington, D. C.; K. D. Zahn and R. W. Van Sickle, Justus & Parker Co., Columbus, Ohio; J. C. McKee, Jr., McKee Music Co., Charleston, W. Va.

J. W. Brothers, Canton Hardware Co., Canton, Ohio; W. B. Hawkins and Paul C. Haymond, Monongahela West Penn P. S. Co., Fairmont, W. Va.; J. D. Gerken, Jr., and A. V. Parsell, Fostorio, Ohio, Gerken Heating Corp., Toledo; Wm. M. Wallace, II, Wilson Machinery & Supply Co., Lexington, Ky.

Lloyd Merryweather, Thomas Merryweather Co., Akron, Ohio; C. C. Chaffin, Scholl-Chaffin Co., Youngstown, Ohio; P. O. Stahl and C. T. Pugh, Air Conditioning & Refrig. Sales Co., Raleigh, N. C.; L. Q. Elliott, Bowers Bros. Auto Electric Co., Augusta, Ga.

S. Z. Downs, Carrison Downs Co., Inc., Jacksonville, Fla.; D. F. Williams, Williams for Refrigeration, Inc., Greenville, S. C.; W. A. Owen and W. K. Owen, W. A. Owen, Johnson City, Tenn.; Phifer Smith, Knoxville, Tenn.; Carl Sneeden and L. T. Landen, Sneeden's, Wilmington, N. C.

Dodd Brown and C. V. Stevens, W. A. Brown & Sons, Salisbury, N. C.; John W. Huffaker and W. L. Shuping, General Appliance Co., Charlotte, N. C.; V. Stallings, Smith Elevator & Mfg. Co., Chattanooga, Tenn.; H. H. Browning, Browning Fixture Co., Danville, Ill.

Albert Gartner, Gartner Refrigeration Co., Duluth, Minn.; W. W. Jones, Jones Equipment Co., South Bend, Ind.; Gil Gardner, Northeast York Dist. Co., Saginaw, Mich.; H. P. Webster, Webster Engineering Co., Minneapolis; J. H. Milbourn and Robert Milbourn, York Refrigeration Products Co., Lansing, Mich.

Fred Zuehlke, Zuehlke Refrigeration Service, Oshkosh, Wis.; Tom Edge and Del Morley, Southwestern Refrigeration Co., Fennimore, Wis.; Wayne Hartleip and Milton Hartleip, Hartleip Equipment Co., Waterloo, Iowa; Carl Flick and George C. Foerstner, Amana Society, Inc., Amana, Iowa.

L. R. White, Air Conditioning & Heating Co., Springfield, Ill.; Perry Philips, Philips & Co., Columbia, Mo.; Wilbur J. O. Wagner, Wagner & Waggoner, Jefferson City, Mo.; M. L. Brown, Dallas Air Conditioning, Dallas; L. G. Adams, Harwell Appliance Co., Jackson, Miss.

L. T. Carne, Johnson Corp., Shreveport, La.; A. W. Whitten, Whitten Sales Co., Austin, Tex.; M. T. Harris, Harris Fixture Co., Mobile, Ala.; Richard Oeberst, Refrigeration Equip. & Serv. Co., Santa Rosa, Calif.; J. J. Murphy and Everett C. Lambert, Maryland Refrigeration Co., Baltimore; C. D. Forney, Hardcastle & Forney, Easton, Md.

Alexander Orr, III, Alexander Orr, Jr., Inc., Miami, Fla.; W. E. Leverett, G. C. McKenzie, Ashburn, Ga.; James B. Stein, Jr., Penn-York Distributing Co., Harrisburg, Pa.

G. F. Taubeneck, Air Conditioning and Refrigeration News, Detroit; M. O. Ningard and Mr. Watson, Commercial Credit Co., Baltimore; H. F. Dever, Minneapolis-Honeywell Regulator Co., Philadelphia; A. E. Mudkins and C. R. Marshall, J. M. Mathes, Inc., New York City; Frank Chalmers, New York City.

Regional Commercial Supervisors: J. F. Kinnard, Boston; R. C. Follett, Brooklyn; C. R. Logan, Philadelphia; F. J. Marshall, Cleveland; D. H. Cress, Atlanta; E. H. Simon, Field Eng., Atlanta; F. H. Mead, Chicago; H. A. Ware, St. Louis; H. W. Gillis, Houston; V. T. Kartorie, Field Eng., Cleveland.

Two Gloekler Cabinets Used by Westinghouse

PITTSBURGH — Two commercial refrigerator cabinets, Models 30 and 45, are being produced by Gloekler Mfg. Co. for distribution through distributors and dealers of Westinghouse Electric & Mfg. Co. Self-contained Westinghouse hermetically-sealed refrigerating units are mounted in the bottom of both models.

Gross capacities of the two cabinets correspond to their model numbers. Through use of extra-high shelves, the two lower compartments of Model 30 will hold 14 cases of beverage conveniently; the three lower compartments of Model 45 have room for 21 cases. Top shelves of both models have sufficient height for the larger 24-oz bottles.

Both models have 3-inch insulation, re-tinned steel shelves, and extra-heavy chromium hardware. Either model may be equipped with solid or glass type display doors in top section, and can be obtained in either porcelain or Dulux finish.

Model 30 may be equipped with an ice-cube maker installed in the upper right hand compartment. Combined with the standard back wall coil, this ice-cube maker causes no temperature drop or humidity change no matter how heavily frosted the unit becomes, Gloekler engineers assert. Neither does the ice-maker impair the efficiency of the food or beverage compartments. Two sizes of this ice-maker are available, one freezing 7.64 lbs. of cubes, the other freezing 14.4 lbs.

Specifications of the two models follow: Model 30—over-all width, 48 inches; depth, 28 inches; height, 78 inches; shelf area (including bottom), 26¾ sq. ft.; net storage capacity, 25.3 cu. ft. Model 45—over-all width, 70 inches; depth, 28 inches; height, 78 inches; shelf area (including bottom), 41 sq. ft.; net storage capacity, 38.6 cu. ft.

New Warehouse Added To Seeger Plant

(*Concluded from Page 1, Column 4*)

and spot 10 freight cars and several trucks at one time.

Connection with the main Seeger plant is through a conveyor under Arcade St.

The building was constructed, according to Mr. Leonard, to provide additional storage space for finished cabinets, leaving room in the main plant for the storage of raw materials in warehouses located in various sections of the city.

Seeger is employing 2,100 men and women at the present time, Mr. Leonard said. The company's assembly line is working 18 hours daily, and the feeder lines about 22 hours. Production ranges from 50 to 70 cabinets per hour, with an average daily output of about 1,250 cabinets, of which 50 are of commercial, the balance domestic type.

The company expects 1937 to be its greatest year in the commercial refrigeration field, Mr. Leonard said.

Importance of Insulation In Ice Cream Truck Shown by Builder

DALLAS—To show ice cream manufacturers the advantage of efficient distributing equipment, American Body & Equipment Co. recently built a mechanically refrigerated 370-gallon demonstrator body which will maintain temperatures down to —10° F.

Originally displayed at the Ice Cream Manufacturers' convention in Hot Springs, Ark., last November, the demonstrator is now on a tour of important sales and distribution centers throughout the southwest. Its primary function is to show the importance of ample insulation in the maintenance of low temperatures necessary for the proper handling of ice cream.

The roof of the 370-gallon-capacity refrigerated compartment is insulated with 7 inches of Dry-Zero. Six inches of Dry-Zero is used in the walls, and 6 inches of cork in the floor. Walls and roofs of the empty can compartment are insulated with 3 inches of Dry-Zero, so this space may be used to carry an additional 120 gallons of ice cream for delivery within two hours.

The 88x57x33-inch ice cream compartment is divided into two equal sections. The empty-can and refrigerating-unit compartments are located at the rear of the body. Each is 38 inches long, 31 inches wide, and 47 inches high.

Three Kold-Hold units and a model KTL-3100 1-hp. Kelvinator methyl chloride condensing unit powered by a Century 1,000-watt system power-take-off, comprise the refrigerating system.

CONDENSERS
EVAPORATORS

33 years specialized experience in this field has qualified us to give you intelligent, practical engineering cooperation on both electric refrigeration and air conditioning applications, large and small.

LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION
DETROIT, MICH.
WINDSOR, CAN.

LONG

THE Hill REACH-IN REFRIGERATOR

Made Especially for HOT KITCHENS

Here is a box with heavier insulation, to keep down operating costs; all-porcelain exterior and interior, to withstand hard usage; better refrigeration, to prevent spoiling and drying; and many other features.

• Send for complete illustrated 32-page catalog using business letterhead.

Note thick center of low conductivity corkboard insulation and also insulating board covering entire exterior, including frame.

THE Hill TRENTON, N.J.

HILL PRODUCTS DIVISION
C. V. HILL & CO., INC., TRENTON, N. J.

York Sales for Quarter up 93% over Last Year

YORK, Pa.—York Ice Machinery Corp.'s reported sales for the four months ended Jan. 31, 1937, the first four months of its fiscal year, totaled $6,145,250, an increase of 93% over the same period of the preceding year. Sales for January were the largest for any month in the corporation's history, it was stated.

8,087 Conditioned Passenger Railway Cars in Use

CHICAGO—The nation's railroads and the Pullman Co. had 8,078 air-conditioned passenger cars in operation on Jan. 1, 1937, reports J. J. Pelley, president of the Association of American Railroads.

Since last April, more than 1,300 passenger cars have been equipped with air-conditioning systems, Mr. Pelley said. Railroad companies own 3,926 of the total number of air-conditioned passenger cars, including 2,293 coaches, 885 dining cars, and 748 other passenger types.

THE AIR AGE

By F. O. Jordan

The purpose of this column is "open discussion," not merely by the Air Conditioning Editor, but by the readers as well. Write in your questions pertinent to air conditioning, and we will start the discussion which we hope will be joined by all, by printing the question, as well as our version of the answer. Anything of interest that you know will be appreciated, if mailed in over your signature.

* * *

The Bottle-Neck

This caption is not an entry in a name-calling contest, its purpose is to call attention to a very unusual opportunity.

During these trying times, most opportunities are highly competitive, and most fields of activity are overrun. The college grad strides through the portals of the old alma mater with the World all wrapped up in his diploma—only there is nothing in the world for him to do with his diploma. It is just a case of too much competition—law — medicine — engineering—they are all the same. Just try to think of something that is different.

But there is one exception, Mr. Ripley—**Air Conditioning.**

Air conditioning, to which the shortage of trained men actually is a problem.

No less an authority than J. J. Donovan, manager of General Electric's air-conditioning department, says:

"Lack of trained man-power is the bottle-neck of the air-conditioning business."

The Refrigeration and Air Conditioning Institute, whose Board includes many of the industry's leaders, is convinced as the result of recent investigations, that the air-conditioning industry alone will absorb between 5,000 and 7,500 **newly trained** men per year for the next 10 years.

Think that one over, young fellow, before you bewail the by-gone days of opportunity.

* * *

Ill Winds

This flood whose record-breaking crest has just gone "rolling down to Rio" was a terrible thing for the Ohio Valley, all will agree.

But "it's an ill wind that blows nobody good," which is another way of saying that it's a bum flood that washes nothing ashore.

Good things washed ashore in the wake of this flood will be the tremenduous volume of employment inevitably required for the rehabilitation and the future protection of this great valley that is far too valuable to leave to Old Man River.

While some of the refugees doubtless will shake the mud of the valley from their sandals forever in favor of higher ground where they can go to bed of rainy nights without getting excited if they feel something wet, the majority will stick around the old stand and build it up again. They always do.

In either case a tremenduous volume of new building **must** be the answer.

And now some points for the air-conditioning industry to remember. Summers in the Ohio valley have three memorable characteristics; temperature, humidity, and length. Nor are the winters along the Ohio any less authoritative, especially to the blood-thinned natives.

Back these climatic idiosyncrasies by the ever-growing modern yen for air conditioning every new thing, and the rest is easy. For who can find the heart to deny that every one of these new homes will be built around all-year or at any rate winter air conditioning in some of its forms?

Folks just naturally get air-conditioning minded in a weather-belt where they really have it as they do along the Ohio.

As we see it, any air-conditioning outfit that slips up on this great opportunity for the furtherance of the natural air-conditioning mindedness of the "Ohio Vallian" deserves to drown in the Great (?) Miami at its normal mid-summer flood-stage depth of 2½ inches.

* * *

A Friendly Call

L. S. Keilholtz just dropped in to wish us well. Mr. Keilholtz is one of the oldtimers in the refrigeration industry who made his debut with "Boss Ket," but who now has thrown the weight of his brains and personality in the balance on the side of air conditioning, under a different boss.

Thanks for the good word, Lester. Same to you. Here's hoping that you can stick with your diet, and that eventually you fall off to a ton.

* * *

Air-Conditioning's Part in Railroad Prosperity

Its worst enemy is forced to admit that Air Conditioning has acted a major role in the successful play for more customers staged by the railroads, and furthermore that its leadership in the continued run of this popular hit continues with no evidence of waning.

Possibly the importance to the cast of this cool character is second only to the return to the scene of his old successes of General Prosperity himself.

Not many years ago it was worthy of special note when air conditioning as a whole reached such prominence that national conventions just for air-conditioning engineers were warranted. But now the growth of Air Conditioning has progressed to such a degree that it has become advisable to break it down into sections, and to put on meetings for each **breed** of air-conditioning engineers.

An example—the recent five-day conference of **Railroad** air-conditioning engineers at Columbus, Ohio, attended by air-conditioning engineering representatives from 31 railroads.

In recognition of the importance of Air Conditioning to their very life, extensive air-conditioning laboratories have been placed in service by various railroads and other groups dependent upon the railways for their livelihood. Participating in railroad air-conditioning laboratory tests have been:

600 Railway Passenger Coaches.
5,000 Railways Passengers.
240,000 Miles of Railway Travel.

It is claimed that to date, air conditioning has been installed in 8,000 railway passenger coaches at a cost of 45 millions of New Deal dollars.

Certainly railroad directorates, not being in business for their health, are not spending all that money merely because of academic interest in Science. Before these "hard heads" cast **their** "bread upon the waters," they must have actual proof that it will be returned to them many-fold before too many days.

Herein we use just another example of the benefits to the individual resulting from the good old competitive principles of capitalistic democracy.

Whereas the forgotten man once rode the heat and grime of railway travel, or stayed at home because there existed no other method of going places, he now is wafted in swift comfort upon his way amidst the cooling pure atmospheres of conditioned trains, merely because the competition to the railways of the cheapness of bus travel, the independence of going by private auto, and the speed and comfort of air transport, have forced the owners of the Iron Horse to do something for the great American traveler in addition to merely taking him somewhere—or else leave him to the magnetic powers of competitive forms of travel.

How many air-conditioned trains would there be under any economic system not utilizing the irresistible urge to progress inherent in the competitive instinct?

The highlight from the future-lookers point of view is that the air conditioning of passenger trains must continue as long as such competition exists, unless railroad managements are content to run their trains just to give the conductor a ride.

* * *

Less Milk from Hot Cows

Tests which have been conducted in a psychrometric chamber at the University of California over a period of 45 days with Jersey cows as subjects have proven that milk production may suffer as much as 30% if the environmental temperatures are maintained above 85° F. These tests proved also that humidity has very little effect upon the cow.

The interest of this item for the air-conditioning engineer is not that cows go to college, but that it places the dairy upon the prospect list of users of air conditioning.

Armed with this promise of 30% more milk during hot weather, the livewire air-conditioning salesman should be able soon to number some profitable dairy-conditioning jobs to his record of installations made.

* * *

Residential Air Conditioning to The South

Some statistics seem to indicate the opportunities of residential air-conditioning sales to be better as one goes further to the southward. The statistics are:

Locality	Number of Residential Air-Cond. Installations	Percent of Total Air-Cond. Installations
Chicago	48	11%
Philadelphia	33	19%
Indianapolis	28	36%
St. Louis	197	44%

This decided increase in the relative importance of residential air conditioning in the lands of long hot summer should be of interest to the air-conditioning industry as being indicative of the most profitable spots in which to push air-conditioning sales.

Since a considerable part of the waking hours are spent away from home, either at outdoor pastimes or in air-conditioned places of business or pleasure, it seems probable that a large proportion of residential air conditioning in the hotter climates is purchased in the interest of comfort during the time of slumber.

No fat man who has endured weary mid-summer hours abed in the lower Mississippi valley, shrinking from the gruesome crawly feeling of his own simmering post-midnight perspiration can question the advisability of air conditioning for making summer sleep a possibility in those localities.

These facts seem to indicate the advisability of developing inexpensive equipment suitable for the cooling of bedrooms. Air-conditioning manufacturers, take notice.

Economy Claimed for New-Type Condensers

(*Concluded from Page 1, Column 1*)

inlet and outlet headers. The coil sections are sloped to facilitate drainage of liquid refrigerant from them.

The motor is of the totally enclosed type, rubber-mounted vertically above the tank, and drives both the fan and the water lift.

According to the manufacturer, operating economy is an outstanding feature of this unit. It is claimed that performance is balanced to meet varying air and water conditions so that usual condensing water costs are reduced 95%.

Other advantages claimed are:

Float valve for maintaining proper water level.

Coils may be flushed clean without being removed.

Absence of nozzles which may clog.

One motor only is used.

No pump is required, so that bearings and stuffing boxes are eliminated.

Exceptional compactness.

Three similar models are available, the "EC-35," the "EC-70," and the "EC-90."

The manufacturer rates the condensing capacities as follows:

Model	Condensing Capacity
EC-35	15,000— 45,000 B.t.u. per hour
EC-70	30,000— 90,000 B.t.u. per hour
EC-90	40,000—120,000 B.t.u. per hour

Cutaway view of Fedders Model CP-35 Constant Pressure Valve showing .3125" Needle-Seat Orifice and large refrigerant passageways assuring minimum pressure drop. Note convenient T Handle Adjusting Stem and Shut-off valve for gauge.

HEAT TRANSFER SPECIALISTS SINCE 1896

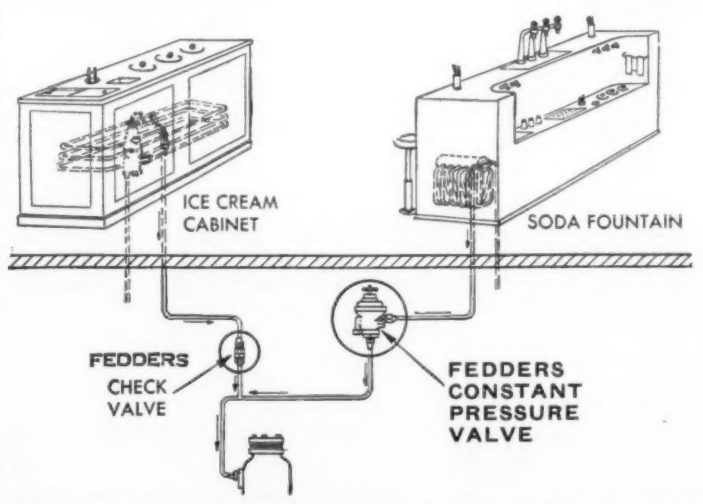
How

FEDDERS CONSTANT PRESSURE VALVES

Give Performance Insurance on Low Side Hook-ups

FOLLOWING DATA ON PRESSURE DROP AND CAPACITIES BASED ON TESTS USING FREON

Capacity—B.T.U. per Hour	3000 B.T.U.'S	6000 B.T.U.'S	9000 B.T.U.'S	12000 B.T.U.'S
Pressure Drop in Lbs. thru CP-35 valve with ⅛" or ⅝" S.A.E. male flare connections	1.0 Lbs.	1.6 Lbs.	3.0 Lbs.	8.5 Lbs.



Typical installation of Constant Pressure Valve. Also Note location of Fedders Check Valve.

Refrigeration men everywhere are welcoming the Fedders Constant Pressure Valve as a simple, easily installed, economical and extremely accurate means of controlling each unit in a multiple system with cooling units necessarily operating at various loads and temperatures.

They are also used on single installations where operating conditions require extremely accurate control.

The diagramatic sketch below shows where and how Model CP-35 Constant Pressure Valves are installed in a typical restaurant or drug-store hook-up.

The valve controls the pressure within extremely close limits measured in ounces.

A convenient shutoff valve with gauge connection is standard equipment to make it easy to obtain the desired setting by means of the T handle adjusting stem of the valve.

Helpful information on the uses and application of Fedders Constant Pressure Valves is given on Pages 9, 11, 14, and 21 of Joe Askin's book, "Refrigeration Engineering and Service Articles," also on pages 36, 37, Bulletin 75-D.

Recommended and sold by Representative Suppliers everywhere.

FEDDERS MANUFACTURING CO.
57 TONAWANDA ST. BUFFALO, N. Y.

Atlanta, 175 Luckie St., N. W. Cincinnati, 305 E. Sixth Street Los Angeles, 1501 W. Eighth St. Philadelphia, 2100 Arch Street
Boston, 712 Beacon Street Chicago, 603 W. Washington Blvd. Dallas, 209 S. Pearl Street New York, 114 E. 16th Street

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

AIR CONDITIONING AND REFRIGERATION NEWS

Established 1926, Registered U. S. Patent Office as Electric Refrigeration News.

Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell—Detroit

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $3.00 per year; 2 years for $5.00. All other Countries: $5.00 per year. These rates will be increased on March 1, 1937.
Notice: Please do not pay money to strangers claiming to represent this paper. We employ no subscription solicitors. Send orders and remittances by mail.

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Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOL. 20, NO. 7, SERIAL NO. 413
FEBRUARY 17, 1937
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Tide Rising

SWIFT and peaceful settlement of the dispute between Kelvinator Corp. and the relatively small number of workers who threw a monkey wrench into Kelvinator production by "sitting down" at their benches will be greeted with cheers and relief by the entire industry.

From the standpoint of unobtrusiveness, absence of wrangling, and speed of concluding the negotiations, the settlement of this strike should serve as a model of industrial arbitration for the entire nation. To President George Mason, Vice President H. G. Perkins, Attorney Alex J. Groesbeck (former governor of Michigan), and others of Kelvinator who displayed such astute diplomacy and so reasonable an attitude in dealing with the union, should go credit for deft solution of a tough problem.

Everybody Affected

That strikes might affect the entire refrigeration industry this year is a proposition which AIR CONDITIONING AND REFRIGERATION NEWS has discussed editorially more than once since Roosevelt landslid into office. It has been the belief of the NEWS that dealers were in no real danger of not getting enough refrigerators this spring, even though several strikes were to be instituted, because of the industry's huge productive capacity, because of ample warehouse stocks built up against the eventuality of union-inspired production interruptions, and because of the industry's fine labor record.

Nevertheless, the NEWS feels that it owes readers continued alertness on this subject, for apparently a tide of union agitation is rising in the nation, and undoubtedly each individual outbreak has possibilities of affecting various concerns and groups in the air-conditioning and refrigeration industry in one way or another.

In a neighboring column on this page is published a letter from Jack Waddell, Norge distributor in Boston, mildly protesting against the publication of strike news. Mr. Waddell, a good friend of the editor, undoubtedly acted in good faith in offering what he considered a piece of friendly advice. But we doubt if he has fully considered the question, or that he is awake to the dangers inherent in the present situation.

New, Potent Weapon

The NEWS does not propose to throw a scare into the industry. Sound thinking can solve each labor problem as it comes up, with a minimum of difficulty, as Kelvinator officials have just demonstrated. But we do maintain that industry organizations, small and large, must wake up to the fact that union troublemakers have a new and potent weapon in their hands—illegal seizure of property with the apparent sanction of the government—and that sticking one's head in the sand is no way to meet a situation which seriously threatens the existence of every variety of property rights.

The best thinking of all the good minds in the business will be required to get and keep the situation under control.

In this connection we are not referring so much to the possibility of further sit-down strikes in the refrigeration industry itself, as to the effect that the use of the illegal plant seizure technique in other industries could have on the business, everywhere, and the larger implications of a movement which, if allowed to gain momentum unchecked, may undermine law and order and the institutions of a constitutional democracy.

Open Discussion Needed

As was pointed out in the editorial last week, the old "hush-hush" theory of industry—as exemplified in Mr. Waddell's letter—is no way to deal with the present situation. In fact, that attitude of telling neither employes nor the public anything that management feels "would not be good for them" is one of the underlying causes of the present troubles.

The excesses of competitive selling, the effort to maintain a false front, the exaggerations in advertising, and the hushing of troubles, have all contributed to the rather general distrust of business which was reflected in the overwhelming majority given President Roosevelt—who is making a career out of slapping at industry and commerce—at the polls last November.

Front-Page News

Even so, keeping the industry informed regarding strikes is not a matter of stirring up anxiety in the field. The sit-down strike—along with child brides, royal romances, and the impending suicide of Europe—is at the moment at the top of the current cycle of public interest as reflected in the front pages of newspapers. It thus becomes the function of the NEWS to report events calmly, so as to allay speculation and fears aroused by the inaccuracies and hasty reporting of the daily press.

In the past, many strikes have been instituted for what have seemed justifiable reasons. Workers have been sweated and held to a low level of subsistence. But the standard of living attained by American labor is higher than that enjoyed by workers in any nation at any time during the world's history. Today's strikes, with their primary emphasis on union recognition, are incited by personal ambition, desire for power, and a more or less open hope of stripping the gears of the American system.

How It Works

Here's what happens: A demagogue with a labor following yearns for might. With the aid of agitators who would like to force the United States to exchange the freedom of a capitalistic democracy for the servitude of a totalitarian state, the demagogue and his henchmen persuade a small group of workers in a plant to take possession, and prevent their fellow workers from continuing with their appointed tasks.

Primary results: the plant closes down, with heavy losses to management and stockholders, to salaried workers, to those who distribute its products, and, above all, to the majority of workers—who can least afford to be thrown out of their jobs.

Secondary results: like a pebble dropped into a pond, the strike causes waves of trouble to spread out in all directions. Factories of suppliers are affected, causing the unemployment of laborers who are no party to the original controversy. Transportation suffers; so do producers of raw materials.

In ever-widening circles distribution is crippled as orders are curtailed, salesmen and clerks dismissed, power and fuel requirements lessened, retail trade hit. The public is inconvenienced. Tax collections shrink, advertising is cancelled, and before very long the total cost of the strike may amount to several hundred times the value of wages lost to men deprived of their jobs at the strike center.

Your Own Home

To make the case more concrete, let us suppose that the cook and the laundress in a fairly well-to-do home—or the janitor and engineer of an apartment house—declared a "sit-down" strike, refusing to allow the owners or renters of the home to enter. The corner grocer and the meat market would lose trade, and so would the drug store. Undoubtedly the owners would order the electricity and phone disconnected, causing losses to utilities. And so on the vicious circle would go.

Distressing feature of the "sit-downs" is the seeming collusion of the government. The laws of trespass are disregarded. Pickets are fed with relief money. Employers are insulted by an inept and old-maidish Secretary of Labor, and by a dirt-digging-and-slinging senatorial committee. Guards and strike-breakers are prevented from crossing state lines, but labor sympathizers can jump into their cars and drive anywhere they like to join picket lines, demonstrations, and even incite riots.

Responsibility to Public

Continuance of this policy on the part of unions, of course, will some day cause a reaction on the part of the public which could bring about a situation similar to that obtaining in Italy, where strikes are forbidden, with the army to enforce the decree.

For their own protection, as well as in the public interest, unions should seek to assume public responsibility for their actions, and to steer clear of illegal and dishonest methods. Trespassing on and seizure of property cannot be justified.

To become publicly responsible—and to eliminate the racketeers who have seized so many unions—it has been suggested that labor unions incorporate, and that federal recognition and privileges be extended only to those which do. Publication of an audit of receipts, expenditures, and salaries should follow. And, as corporations, they could be made liable to civil suits.

For its part, it is indicated that management should adopt an attitude of honesty, frankness, and open above-boardness with employes and the public. Adherence to such policies will win approval and support.

— LETTERS —

No Publicity?

General Equipment Corp.
New England Distributors
Norge Products
584 Commonwealth Ave., Boston
Feb. 8, 1937

Editor:

I have just received the Feb. 3rd issue of the NEWS, and on the front page is an article—"Kelvinator shuts down when strikers parade."

Of course, I appreciate this is news and from that angle you might want to publish it—but for the good of the industry as a whole I think the less publicity you give such items, the better—in fact, no publicity at all if that is within the bounds of propriety. T. G. WADDELL

Answer: See editorial.

York and G-E Labor Policies Praised

4115 Buell Drive
Ft. Wayne, Ind.
Feb. 13, 1937.

Editor:

Upon reading your editorial in the Feb. 10 issue of the NEWS I could not help but think of the one you published in the Dec. 15, 1935, issue.

It does my heart good to see the change in attitude of those who contribute no small amount toward the trend of thought in our industry.

The end of that editorial in the Dec. 25, 1935, issue—"Don't bite the hand that's feeding you; don't kill the goose that laid the golden eggs; don't be a sucker"—surely did exasperate me when I read it.

Employer-employe relations then and previous to that time were positively barbaric.

We cannot hope to continue our complicated business structure unless we go back to the old golden rule policy that everybody has tried so hard to break down in the years past.

I have no more use for a contemptible politician than you have but I do very much wish to see this country once more made a place where a man can feel that he has some part in the working out of his own destiny and not merely an economic slave.

You speak of the York employer-employe relations in your current editorial. I think the spirit exemplified there is fine. Also I would like to put in a good word for the General Electric Co.

That description of yours might well be one of a get together in our own plant here similar to the one we had on the night of Feb. 12.

If this attitude had been displayed even three or four years ago we would not now have any fertile ground for those dirty lousy radical labor organizers to cultivate.

In conclusion, if we can only get those die-hard so-called economic royalists to see the light and really cooperate I believe there is a great future for American industry yet.

J. K. MARQUARDT.

Faint Praise from French Press Representative

Republique Francaise
Ministere des Travaux Publics
French Government Tourist Bureau
La Maison Francaise
610 Fifth Ave., New York, N. Y.
Feb. 4, 1937.

Dear Mr. Taubeneck:

The elegant spread of space you gave us on your editorial page in the issue of Jan. 13 was nothing less than the right answer to a press representative's prayers.

Our sincere thanks herewith.

Whether you expected us to feel that way or not, we think it was a just representation of the whole situation, and we are quite willing to stand or fall on its reaction to your readers.

Incidentally, was my face red this afternoon when a distinguished French visitor was taken for a 20-minute ride up and down the highways of New York City to get three blocks from this office, because the taxi driver insisted on taking us to the Grand Central Station instead of the Grand Central Palace? (And, I speak mid-west "American" with an accent a yard wide.)

But, the French gentleman never said a word, nor seemed to feel that there was a conspiracy against him when he paid the fare. Perhaps we Americans should learn more about taking our taxis calmly . . . or leave them alone.

When you are in New York again, please do come in to see us. We feel that we owe you at least a good lunch.

(MRS.) HALL KANE CLEMENTS,
Press Representative.

Nice Weather? Brr!

Box 272
Lago Oil & Transport Co.
Aruba, Netherlands West Indies
Feb. 11, 1937.

Editor:

Tell the writers of the letters complaining that Monday is too long to wait for their issue of the NEWS to pipe down. I have to wait two or three weeks.

They are just in a hurry to go nowhere and are not going to do anything after they get there, as they will discover if they try some of this tropical life.

The only thing tropical about the island here is the climate, which causes the thermometer to hang about 80 and above the year around. The looks of the cactus and rocks that are the principal features of the landscape remind me of some parts of Texas and New Mexico.

The wind has two speeds here. Hard and harder. But enough about here. It may make you envious, since you are enjoying such nice cool weather there and have no need of the air conditioner now.

Wishing you continued success with the NEWS and myself continued pleasure reading it. O. A. GOODWIN.

Mailing Lists

Brickman-Saizow Co.
Manufacturers' Sales Representative
2018 Grand Ave., Kansas City, Mo.

Gentlemen:

We are subscribers to REFRIGERATION NEWS and are also connected with the refrigeration industry.

We are interested in obtaining at this time a list of all refrigeration dealers in the territory we cover, which consists of the states of Iowa, Nebraska, Kansas, Missouri, Oklahoma, and Texas. Can you advise us how a list of this kind may be obtained? We desire an up-to-date list of the present dealers connected with the refrigeration industry. We desire to make three or four mailings to a list of this kind and thought perhaps you have available for your subscribers, at a nominal cost, an up-to-date list of this kind. H. J. SAIZOW.

Answer: See "Questions and answers about the Red Book" on page 6.

The Red Book Is Going to Holland

J. Den Boestert
Sales Representative
7 Pels Ryckenstr, Arnhem, Holland

Dear Sirs:

We are in receipt of the first copies of our subscription on your REFRIGERATION NEWS.

We have been going thoroughly in its contents and have pleasure to inform you, that it is very instructive and easy to read. Also Mr. Taubeneck's "Around the World" is very interesting.

We are a.o.t. sales representatives for the Apex Electrical Mfg. Co., Cleveland, Ohio, for Holland and its Colonies and Belgium.

You would oblige us very much to put us on the Manufacturers' Mailing List for Air Conditioning, Refrigeration, and kindred lines.

Thanking you in anticipation.

J. DEN BOESTERT.

Low Temperature Specialist

Laird Engineering Co.
No. 2 Virginia St. E. Section E
Charleston, W. Va.

Gentlemen:

Please put us on your mailing list for any new catalogs of refrigeration supplies or accessories that are issued from time to time. We sincerely appreciate the AIR CONDITIONING AND REFRIGERATION NEWS as we find it a great help in keeping abreast of the times.

The nature of our business is the development of special refrigeration equipment of especially low temperatures for laboratories and chemical manufacturers. We have developed several items which we think will be of interest to REFRIGERATION NEWS readers and if interested we would be glad to send them to you.

J. M. LAIRD.

Answer: We are pleased indeed to receive information about the practical experiences and new engineering developments of subscribers.

Strikers Take Over Cafeteria

Times have changed for the down-trodden laboring man who goes on a strike. Members of the Mechanics Educational Society of America, who staged a carefully planned and well managed "sit-down" strike at the Kelvinator plant in Detroit, got better "service" while in possession of the refrigerator plant than did the automobile strikers in the General Motors plant at Flint. The latter had to depend upon daily deliveries of home cooking.

Kelvinator Outlines Stand on Sitdowns

(Concluded from Page 2, Column 5)

returnable Monday morning at 10 a.m. in the circuit court of Wayne county.

"Its decision to do so was based on looking toward an orderly legal solution to the unlawful entry and possession of the company's Plymouth Road plant and office quarters by sit-downers.

"Kelvinator reiterated in its statement that in asking for an injunction it was not proceeding against its workers, with whom its relations have been mutually satisfactory over the last 23 years. It was doing it so that the interruption of plant and office activities of 3,000 employes by 71 sit-downers might be terminated forthwith, as well as to further by orderly methods the broad principles of human and property rights involved in the situation."

Picket lines on the Fort St. plant were removed Saturday afternoon, following a conference between police officials and members of the strike committee, and the dozen guards on duty for the company inside the plant received their first food since Friday.

Beds and bedding used in the General Motors strike in Flint, which ended Thursday, were brought down Friday for use by sit-downers inside the Plymouth Road plant.

Meanwhile, the prolonged conference between attorneys representing management and strikers continued throughout Saturday, and when it broke up after 8 p.m. that night, Mr. Groesbeck said that the conferees had failed to agree on at least one major point.

Attorneys met in another conference Sunday. Attorney Groesbeck was the only representative of Kelvinator present, but was in constant touch with Vice President H. L. Perkins and Merlin Wiley, attorney and member of the board of directors.

During the conferences, Mr. Smith and his union associates were demanding that Kelvinator permit a plebescite among employes, to determine collective bargaining preferences as provided by the Wagner Act.

Reporter Pictures Conflicting Emotions As Service Plant Men Reject Strike

Editor's Note: A NEWS staff writer, assigned to cover happenings in the Kelvinator strike, submitted this unusual report of the meeting at which service plant workers voted down a union proposal to join the strike.

By James McCallum

DETROIT — Youth battled age, security defended itself against the threat of insecurity, rationalization struggled against impulse Tuesday afternoon, Feb. 9, as 34 of the 142 workers in the Kelvinator service plant, Fort St. and Vermont Ave., voted 27 to seven to continue work despite existing strike conditions in Kelvinator's main factory.

Indecision seemed to be the dominant note among the men as they gradually assembled in the dingy little I.O.O.F. Hall on Riviera Ave., near Grand River. They arrived singly, or in little groups of two or three. They had come straight from their work at the service shop, and and were dressed accordingly. Some had stopped at nearby taverns to discuss the strike situation over a glass of beer.

Tangled ends of these round-table arguments were still being unraveled as the men gathered in little groups awaiting the opening of the meeting. Rough, good humored outbursts occasionally relieved the tension of the crowd.

Suspicion also was prevalent. Anyone not immediately recognized as a plant employe was questioned thoroughly as to his identity, sympathies, and motives. The workers were making sure that no scabs or plant officials attended their meeting.

Stocky, curly-haired Matthew Smith, national secretary of Mechanics Educational Society of America, the union sponsoring the Kelvinator strike, conferred seriously with a couple of his associates, and somewhat impatiently waited for the size of the crowd to increase. Occasionally he engaged in determined discussion with one of the service men.

Smith suddenly pounded his fist on the little speaker's table at the end of the room. The crowd quieted immediately. Smith began speaking in a soft, determined voice. He briefly outlined the history of the Kelvinator strike, and plainly stated the position of the service plant. He placed before the workers the primary question, "Will you strike, or will you continue to work?"

Ballots were passed, and the vote taken. The result was announced—seven for the strike, 27 against.

Smith immediately took floor again, expressing his disappointment at the outcome. "I was ashamed to have to call on the service plant," he exclaimed. "I thought they would surely support their fellow workers in the main plant of the own accord."

First signs of actual antagonism toward the union appeared when one man recalled a statement made by Smith in a previous speech, in which he had referred to the Kelvinator service department as an "old folks' home." "The outcome of this vote might have been a lot different," the service man suggested, "if this remark and many others like it had come from our local union leader instead of the national secretary of the Mechanics Educational Society."

"Your sympathy with the strike could not have been very well founded," Smith retorted, "if a chance remark like that could change your mind. You must have had some other reason for voting as you did."

"The trouble is," another service employe explained, "we don't know what will happen to us if we go on strike. A lot of us in the service plant aren't young men anymore. If we lose this job it's going to be mighty tough for us to find another one."

"This is war," Smith countered. "And we can't win unless we all pull together. We've got to forget our personal feelings temporarily, and work for the common cause. The company wants this service plant to remain open. They have evidenced this by their actions. If it will benefit the company for the plant to remain open, it must be detrimental to the interests of the workers."

"Everything is in our favor," Smith declared, in speaking of the strike at the main plant. "The law demands that a union have 51% of the plant employes enrolled in its membership before its negotiations. We had this legal number before we presented our initial demands. We followed the cycle of the company's operations, and struck when the time was hot. The company was in full production, and was making plenty of money. That was the logical time for us to present our demands for a wage raise."

"But conditions at the service plant are different than at the main factory," one worker protested. "We get better pay and work 12 months a year. Besides, this is the slow time for service work, so it's not such an opportune time for us to strike."

"Things down at the service plant can't be so slow," Smith interrupted, "when the company officials themselves admit that the recent flood has resulted in more service work than they can readily handle."

"But suppose," suggested another service employe, "that the company elects to send service work to the other service plants at New York, San Francisco, or Chicago, instead of bringing it here."

"They can't do that," Smith declared. "If they do, they will violate a ruling of the National Labor Relations Board. This ruling makes it illegal for a company to transfer work from one plant to another in an effort to break a strike."

Arguments continued to fly back and forth for several minutes, each indicating the attitude of the individual or group from which it came. Youth was rebellious; age wanted security; organized labor and independent labor each strove to prove its point. But the status of the group's vote remained unchanged.

Finally, several members of the group, apparently realizing that further discussion was fruitless, began to drift out of the hall. Seeing his meeting slowly dissolve, Smith called for and received a motion of adjournment. Still, small knots of workers gathered here and there to discuss the meeting's outcome.

After adjournment of the meeting, Smith again conferred with his associates while filing a few scattered papers away in a brief case. Questioned about the result of the meeting, he replied rather sourly, "They voted 27 to seven not to strike. But that won't make any difference. We'll pull them out of there tomorrow, anyway."

That night, at a general meeting of the union local, which includes workers in all Kelvinator units in the city, it was decided to declare the service plant on strike. Arrangements were made to picket the Fort St. unit the following morning.

The picket line at the service plant formed, according to instructions, early Wednesday morning. Between 30 and 40 men and women, bearing placards with the inscriptions, "MESA on strike at Kelvinator," circled in an endless chain in front of the plant entrance, regardless of the near-zero weather. Some 10 or 15 policemen also stood around awaiting developments. Two or three scout cars were parked at the curb, ready for any emergency.

When non-striking workers began to arrive shortly before seven o'clock, they were faced with a dilemma. Some few of them, deciding that they might as well throw their weight with the union, joined the picket line amid shouts of encouragement from the strikers. A few others, encouraged by Kelvinator's Service Director E. A. Seibert, broke past the picket line and entered the plant.

The majority of the plant's employes, however, elected to remain neutral. Some few went home, but most of them mingled with strikers and policemen in encouraging the feeble efforts of a bonfire in a parking lot adjacent to the plant.

Mr. Seibert, nervous, coatless in spite of the cold, and obviously worried, talked earnestly with "loyal employes," strikers, and police officers. After a brief conference between Mr. Seibert and one of the spokesmen for the picketers, it was agreed that office employes should be allowed to continue work without hindrance, providing that nothing but routine office work was carried on.

One of the strikers warned Mr. Seibert that he was "just making it tough for those boys" that he persuaded to work.

Apparently realizing the futility and the potential danger of attempting to operate the plant with so few employes and in the face of existing conditions, Mr. Seibert soon sent home all the "loyal employes," as well as those who remained neutral.

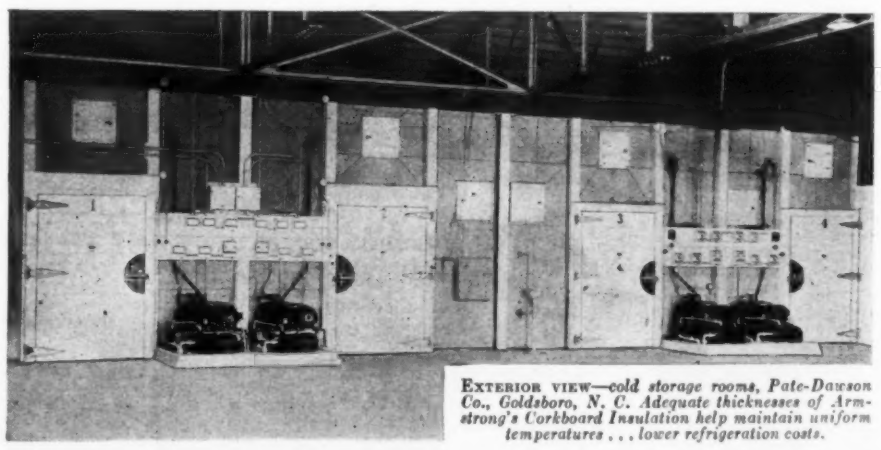
Shortly afterward, the picket line temporarily dispersed, and the service strike entered a period of watchful waiting.

In this cold storage room of the Pate-Dawson Co., Goldsboro, N. C., accurate temperature control is assured by insulating ceiling, walls, and floor with two layers of 2" Armstrong's Corkboard.

Armstrong's Corkboard Insulation guards food quality . . . eliminates refrigeration waste

ARE your storage costs out of line? Are they cutting into your profits? If that's the case—check up on your insulation. Economical operation of low temperature rooms and equipment requires an adequate thickness of efficient insulation properly erected.

Armstrong's Corkboard Insulation provides the kind of dependable, long-life efficiency that insures constant uniform temperatures and continued low operating costs. This is due to the natural cell structure of the material itself. Viewed under a microscope, cork is seen to consist of millions of tiny cells of entrapped still air. It is this unique formation—unduplicated in any other material—which enables Armstrong's Corkboard to resist the passage of heat and the penetration of moisture . . . assures you dependable, economical refrigeration year in and year out.



EXTERIOR VIEW—*cold storage rooms, Pate-Dawson Co., Goldsboro, N. C. Adequate thicknesses of Armstrong's Corkboard Insulation help maintain uniform temperatures . . . lower refrigeration costs.*

It is true economy to insulate all cold storage rooms with Armstrong's Corkboard. Armstrong engineers will be glad to work with you in planning any type of installation. For more complete information about Armstrong's Corkboard—also Armstrong's Cork Covering for cold lines—write now to Armstrong Cork Products Company, Building Materials Division, 1002 Concord St., Lancaster, Pennsylvania.

Armstrong's CORKBOARD

FOR ALL COLD ROOMS

Minneapolis-Honeywell Devotes Advertising To Selling Air Conditioning to Public

MINNEAPOLIS — Minneapolis-Honeywell Regulator Co. is devoting its entire spring advertising campaign towards selling air conditioning to the public on behalf of the industry.

As a result of a number of questionnaires circulated throughout the industry and among consumers, the company found that the majority of people regard air conditioning as a synonym for cooling in summer, or humidifying in winter.

Most people are not yet conscious that air conditioning embodies cooling, circulating, cleansing, and dehumidifying in warm months, and heating, circulating, cleansing, and humidifying, in cold months, the company questionnaire information showed.

Magazines such as *Time, Life, House Beautiful, House and Garden, American Home, Business Week,* and *Nation's Business* will carry Minneapolis-Honeywell copy in the spring. A similar campaign, emphasizing automatic heating and air conditioning, will be run in the late summer and fall months. In addition to national magazines, newspaper space will be used in the majority of the larger centers.

- AIR CONDITIONING SURVEYS -

Fresno, Calif., Area (San Joaquin Power & Light)

Apartment Houses

Name and City	Manufacturer	Hp.
Prior to 1935		
Palms Apartment, Fresno	General Electric	12
During 1936		
*Palms Apartment, Fresno	General Electric	1

Banks

Prior to 1935		
Bank of America, Bakersfield	York	88
*Increase Blower.		
During 1936		
First National Bank, Corcoran	Frigidaire	11
Anglo Bank, Bakersfield	P. & R.	1.25

Beauty Parlors

During 1935		
Flanigan's, Fresno	P. & R.	1.75
During 1936		
Le Roy Gorden, Bakersfield	Super-Cold	3.50

Barber Shops

During 1936		
Bernard Barber Shop, Fresno	H. Diehl Air Washer	.37

Grills & Restaurants

During 1935		
Ambros Bros., Fresno	General Electric	13.25
Gibley's, Fresno	P. & R.	1.25
Hotel Fresno, Fresno	Frigidaire	3.20
Monmarte Club, Fresno	Westinghouse	12.80
The Drink-O-Link, Bakersfield	Frigidaire	12.50
Omar Khayyam, Fresno	Frigidaire	17.25
During 1936		
Pleasanton Cafe, Fresno	Frigidaire	11
Brown's Lunch, Merced	Carrier	6
Hart's Lunch, Fresno	Westinghouse	30
El Tejon Hotel, Bakersfield	Chrysler	22
Tiny's Waffle Shop, Inc., Fresno	York	11
Yick Fung, Fresno	Westinghouse	8.50
Bill's Cafe, Bakersfield	Frigidaire	3.44
Hanning Bros., Bakersfield	Walsh	1
Noodle Bowl, Bakersfield	Utility	.50
Europa Cafe, Bakersfield	Utility	1
Chas. Leon, Bakersfield	Utility	.50
Tiny's, Bakersfield	P. & R.	3.50
States Lunch, Fresno	Walsh	1
China Cafe, Fresno	Walsh	.50
Chong's Cafe, Fresno	Air Washer	.33
Hank's Tavern, Fresno	Air Washer	.60
Lucky Cafe, Fresno	Air Washer	.60
Bud & Jean Cafe, Fresno	Air Washer	.60
O. K. Coffee Shop, Fresno	Sturtevant Air Washer	1.25
Asia Cafe, Fresno	Air Washer	4
L. D. Christman Restaurant, Fresno	Airtemp	2.50

Hospitals

During 1935		
Burnett Sanitarium, Fresno	P. & R.	1.75
Mercy Hospital, Merced	Frigidaire	1.10
During 1936		
Sanger Hospital, Sanger	Westinghouse	8.50
Dearborn Clinic, Madera		18
West Side Hospital, Taft		6
Burnett Sanitarium, Fresno	General Electric Refrigeration	5.25

St. Louis Residential Air Conditioners Use Condensing Water To Spray Lawns

ST. LOUIS—Three residential air-conditioning installations which have been made here are distinguished by the use of waste condenser cooling water for spraying of lawns.

In this way, common objections to the expense of cooling water for air-conditioning equipment are largely overcome by utilizing for condenser cooling water which would be used in any event.

These installations were made by the local distributor for the Frick Co. in the residences of W. D. Orthwein Jr., Donald Danforth, and Arthur Baer.

In each case the installations are quite similar, being substantially as follows:

A 5-hp. Freon-12 compressor with water-cooled condenser is located in the basement, and is connected by refrigerant lines to a central air-conditioning unit placed in the attic.

The central air-conditioning unit delivers air through horizontal mains located in the attic to vertical risers through which the air is delivered downward to the rooms below. These risers are located in second floor closets, while room supply grilles are located in the walls near the ceiling.

One common return air opening is located in the ceiling of the second story stair hall.

All room supply grilles are provided with manually operated shutoffs so that the various rooms may be shut off from the system when not in use, or may be conditioned as desired.

Use of this arrangement results in a considerable saving in operating cost because the reduction in load upon the refrigerating unit attendant upon the reduction in air-volume tends to reduce head and suction pressures. These reductions in turn lower both current and water consumption.

Furthermore, the closing of the dampers to unused rooms makes possible the concentration of the entire capacity of the equipment in one or more rooms which may be heavily loaded due to sun effect or heavy occupancy.

Carrier Equipment Installed in 4 Charleston Establishments

CHARLESTON, W. Va.—Rosenblatt and Hunt, Carrier representative, is handling air-conditioning installations in four Charleston business establishments — McKee's restaurant, Star Clothing Co., Capitol theater and Kay's Jewelry Co.

The Midelburg theater at Logan, W. Va., and the auditorium at Greenbrier Hotel, White Sulphur Springs, are also being equipped with Carrier air-conditioning systems.

McKee Furnishes York System For Greyhound Terminal

CHARLESTON, W. Va.—The McKee Music Co. furnished a $10,000 York air-conditioning system for the new Atlantic Greyhound terminal just completed here. The structure is the first completely air-conditioned terminal in the southeast.

McCoy and Gallaher installed a Frigidaire system in the restaurant operated in connection with the terminal.

Hotels

Name and City	Manufacturer	Hp.
During 1936		
Merced Hotel, Merced	Carrier	73
Savoy Hotel, Taft	P. & R.	13
Taft Hotel, Taft	Sturtevant	4
El Tejon, Bakersfield	Airtemp	22
Southern, Bakersfield	Walsh	1
Motel Auto Court, Fresno	American Blower	1.50
(Motel Auto Court), Fresno	Airtemp	13

Mortuaries

Prior to 1935		
Stevens & Bean, Fresno	Westinghouse	8.50
During 1936		
Paso Robles Funeral Home, Paso Robles	Frigidaire	2
Madera Mortuary, Madera	Westinghouse	6

Offices

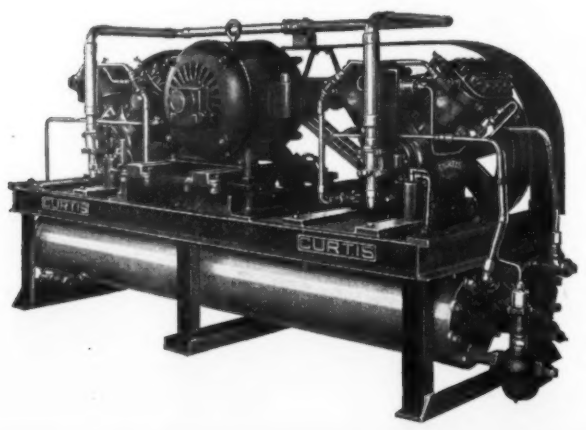
Prior to 1935		
San Joaquin L. & Power Co., Fresno	York	235
T. W. Patterson Building, Fresno	Carrier	247
Dr. P. S. Ching, Fresno	Frigidaire	1
Valley Chevrolet Co., Bakersfield	Frigidaire	3
Dr. T. T. Yatabe, Fresno	General Electric	.50
Dr. P. R. Sutton, Los Banos	General Electric	.50
Physicians' Building, Fresno	Ice	3
During 1935		
Dr. R. B. Curyea, Coalinga	General Electric	.50
Dr. P. S. Ching, Fresno	Frigidaire	2.75
Danish Creamery, Fresno	York	6
Sanger Telephone Exchange, Sanger	P. & R.	1
Peerless Bean Co., Fresno	P. & R.	1.75
Producers Cotton Seed Oil Co., Fresno	Frigidaire	6.50
S. J. L. & P. Corp., Bakersfield	P. & R.	11
Dr. Wallace, Fresno	Kelvinator	11
Assets Corp., Fresno	Frigidaire	3.50
State Dept. of Public Works, Fresno	York	3.50
Dr. Edward Brigham, Dinuba	Carrier	4.50
Brix Building, Fresno	Sturtevant	40.20
During 1936		
Kyle Co., Fresno	Frigidaire	3.25
Dr. Mudd, Merced	Frigidaire	1.25
Helm Building, Fresno	Carrier	90
Better Buy Grocery, Fresno	Cyclops	5.50
Taylor-Wheeler, Inc., Fresno	General Electric	3.75
George Haberfeldt, Inc., Bakersfield	Frigidaire	1.25
Standard Oil Co., Taft	Frigidaire	1.25
Fresno Guar. Building and Loan, Fresno	Westinghouse	8.25
Mason Building, Fresno	Frigidaire	75
Cory Building, Fresno	York	65
Bekins Van & Storage, Fresno	Cyclops	2.50
Sand Stone Brick Co., Bakersfield	P. & R.	1.75
Black, Moffett & Town, Fresno	Westinghouse	3.50
Feltman Studios, Taft	Sturtevant	3
Taft Furniture, Taft	Miller	1.12
F. F. Warren, Bakersfield	P. & R.	.62
Natural Gas Co., Taft	P. & R.	1.75
Kern Co. Tel., Taft	Frigidaire	7.25
Taft Lumber Co., Taft	P. & R.	1
Shell Oil Co., Bakersfield	P. & R.	6.50
Stanley F. Downey, Bakersfield	Airtemp	1
Welport Oil Co., Taft	Frigidaire	16.50
Fred Owens, Taft	Sirang	1
S. J. L. & P. Corp., Taft	Westinghouse	8.75
Hopper Machine Co., Bakersfield	(Assembled)	4
Valley Lumber Co., Fresno	Westinghouse	8.25
Roeding Fig & Olive Co., Fresno	Frigidaire	3.50
R. G. Hamilton Cotton Co., Fresno	Frigidaire	3.50
Shell Oil Co., Fresno	Carrier	10
Merchants Association, Fresno	Carrier	11
Pac. S. W. Realty Co., Fresno	Carrier	215
H. F. White Ins., Fresno	Frigidaire	1.25
Hall of Records (County), Fresno	Sturtevant Air Washer	27.50
Co-Operative Meat Co., Fresno	H. Diehl Air Washer	.60
Reliable Automotive Co., Fresno	H. Diehl Air Washer	.60
Fresno Memorial Auditorium, Fresno	Sturtevant Air Washer	45
Fresno City School, Fresno		
Administration Offices, Fresno	Westinghouse	28

Residences

Prior to 1935		
Dr. P. S. Ching, Fresno	Frigidaire	3.25
George Bowman, Fresno	Frigidaire	1
H. B. Lenard, Fresno	Frigidaire	1.50
E. J. Roper, Woodlake	Frigidaire	1.50
H. H. Courtwright, Fresno	General Electric	3.50
Dr. F. L. R. Burk, Fresno	General Electric	5.75
Burton Todd, Fresno	General Electric	3.75
Harry Balfe, Clovis	General Electric	.50
H. H. Sutton, Fresno	General Electric	.50
L. G. Jeffery, Fresno	Westinghouse	2
Claude Rowe, Fresno	York	1
Frank Thomas, Fresno	Frigidaire	1.60
J. B. Carter, Fresno	Frigidaire	1.60
L. W. Henderson, Selma	Frigidaire	1.60
E. P. Smith, Fresno	Frigidaire	1.60
Dennis Wheeler, Fresno	Frigidaire	1.60
Carlos R. McClatchy, Fresno	Frigidaire	7
During 1935		
M. E. Christensen, Taft	P. & R.	.50
A. Christensen, Sanger	P. & R	3
R. V. Smith, Fresno	Westinghouse	.50
L. E. Wier, Corcoran	Frigidaire	3.25
R. M. Wood, Sanger	P. & R.	.25
L. W. Sanders, Bakersfield	P. & R.	3.25
P. S. Ching, Fresno	Frigidaire	3.50
C. M. Cornell, Fresno		.75
Bert Zook, Fresno	Frigidaire	3.50
Dr. S. W. Walker, Fresno	Frigidaire	3.50
Fred Aggin, Taft	P. & R.	1
Dr. H. A. Jacobson, Fresno	Westinghouse	5.50
A. S. Crites, Bakersfield	Frigidaire	3.50
Max Himovitz, Bakersfield	Carrier	2.50
During 1936		
E. J. Donie, Dinuba	Frigidaire	2.25
George Haberfeldt, Bakersfield	Frigidaire	4
Dr. McPheeters, Fresno	Westinghouse	3.50
LeRoy Gorden, Bakersfield	Super-Cold	3.50
James Curren, Bakersfield	P. & R.	
P. E. Turner, Bakersfield	P. & R.	1
Dr. K. S. McKee, Bakersfield	P. & R.	2
T. A. Peters, Bakersfield	P. & R.	.75
H. E. Clark, Taft	P. & R.	.95
Ed. Haberfeldt, Bakersfield	Strang	1.12
F. D. Patterson, Bakersfield	Frigidaire	1.50
F. A. Hopper, Bakersfield	Frigidaire	1.62
J. P. Anderson, Bakersfield	P. & R.	1
Dr. Philips Hardy, Bakersfield	Coolaire	1
C. S. Corran, Bakersfield	Coolaire	.50
H. E. Lenard, Bakersfield	Frigidaire	3.25
A. E. Thedoaker, Bakersfield	American Radiator	.50
L. B. Banderob, Taft	P. & R.	1
F. A. Hopper, Bakersfield	York	1
Morris B. Chain, Bakersfield	York	3.38
Di Georgia Farms, Bakersfield	Frigidaire	1
Culliton, Bakersfield	P. & R.	.75
S. A. Camp, Bakersfield	Frigidaire	4.50
H. R. Dykes, Taft	P. & R.	1.25
C. Wedel, Bakersfield	Frigidaire	.50
W. Lachenmaire, Bakersfield	Airtemp	.50
George Crome, Bakersfield	Frigidaire	3.75
Melton J. Lohr, Bakersfield	Frigidaire	3.75
Stanley Able, Taft	York	1
Cecil F. White, Fresno	Frigidaire	1
H. F. White, Fresno	Westinghouse	3
H. B. Leonard, Fresno	Frigidaire	9.25
R. F. Schmeiser, Fresno	Frigidaire	3.50
E. J. Cecil, Fresno	Frigidaire	1
Geo. J. Overholt, Fresno	Frigidaire	1
Dr. Halley, Sanger	Frigidaire	3.50
Chet Madden, Fresno	P. & R.	1

What 83 YEARS OF EXPERIENCE Means

IT MEANS first of all that the Curtis organization has accumulated the benefits of successful manufacturing and engineering experience since 1854. It means that today Curtis designs and construction details reflect that fine engineering technique that only experience can produce. And the result is the care-free, efficient performance of each Curtis condensing unit.



It means too that the Curtis merchandising policy is time proved. Curtis does not sell direct nor through any outlet other than its recognized representatives. With such a product and policy Curtis dealers everywhere are making money. Write today for further information.

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1912 KIENLEN AVE. ST. LOUIS, U. S. A.

Airtemp Gets Contract for Installations On 4 Floors at J. L. Hudson Co.

DETROIT — Announcement has just been made here that the contract has been awarded for the air conditioning of four more floors at the J. L. Hudson Co. department store.

The J. L. Hudson store not only is one of the largest in the world, but also for many years has been a major user of air conditioning. It goes without saying that this company must have found their present heavy investment in air conditioning to be a paying one.

The contract has been awarded to the Airtemp Construction Corp., the Michigan factory branch of Chrysler's Airtemp, Inc., in accordance with specifications prepared by Smith, Hinchman, and Grylls, Detroit architects and engineers.

It has been stated that the new system, which is designed for all-year use, will supply more than 250,000 c.f.m. of conditioner air to the second, third, eighth, and ninth floors from 42 separate air-conditioning units.

The completion date for the installation has been set for the early spring, so that it will be in readiness for those first hot days of early summer.

Railroads Have $50,000,000 Investment in Conditioning

CHICAGO—Railroads of the United States and Canada have invested almost $50,000,000 in air conditioning passenger cars, the Association of American Railroads announced. More than 8,000 passenger cars have been serviced.

Fresno, Calif., Area (Cont.)

Recreations

Name and City	Manufacturer	Hp.
During 1935		
Realto Bowling & Billiards, Fresno	Frigidaire	24

Restaurants

Prior to 1935		
Omar Khayyam, Fresno	Frigidaire	7.50
Tiny's Waffle Shop, Fresno	Air Washer	3.50

Retail Stores

Prior to 1935		
Harry Coffee, Inc., Fresno	Westinghouse	16
Harry Coffee, Inc., Bakersfield	Westinghouse	16
Westinghouse Stores, Fresno	Westinghouse	.50
During 1935		
Eastern Outfitting Co., Fresno	Frigidaire	5.20
Owl Drug Co., Bakersfield	General Electric	10.50
During 1936		
Rodder Shoe Co., Fresno	Frigidaire	3.25
Taft Furniture Co., Taft		1.24
Leed Shoe Store, Fresno	York	9
New City Cleaners, Bakersfield		.87
Grace Dalbridge, Bakersfield	P. & R.	3.25
Welds Department Store, Bakersfield	P. & R.	15.50
Pernot & Rich, Fresno	P. & R.	1
Brocks Dept., Bakersfield	Western	10.50
Radlicks, Bakersfield	Sturtevant	2.50
Jensen Optical Co., Bakersfield	P. & R.	1
Valley Lumber Supply, Bakersfield	Walsh	1
Harry Riddle, Taft	P. & R.	1
Midgley's, Bakersfield	Walsh	1
Gene Carlton, Bakersfield	Western	4
Devlin Drew Co., Fresno	Kelvinator	6
Vogue Booterie, Fresno	Frigidaire	3.50
Federal Co., Fresno	Westinghouse	8.25
Zukors Dress Shop, Fresno	Frigidaire	12.25
Owl Drug Co., Fresno	Westinghouse	16.50
Skaggs Grocery, Fresno	York	3.50

Theaters

During 1935		
Majestic, Fresno		4.50
Court, Livingston	Frigidaire	12
Fox-Wilson, Fresno	Carrier	87
Fox, Bakersfield	Carrier	38
During 1936		
Merced Theater, Merced	Carrier	150
Fulton, Fresno	Ice	5.50
Selma Theater, Selma	Westinghouse	25
Ford City, Ford City	(Assembled)	5

Miscellaneous

New City Cleaners and Storage, Bakersfield	Frigidaire	.87
Standard School Auditorium	Sturtevant	10.50
Sam's Re-Nu-Al Shoe Repair, Fresno	Frigidaire	3.25

Houston, Texas, Installations

Beauty and Barber Shops

Name and City	Make	Tonnage	Hp.
Ritz Carlton, 1203 Westheimer	Airtemp	3.5	4
Dulaney Barber Shop, 907 Walker	Kelvinator	7.5	10
Savoy Barber Shop, 1012 Rusk	York	8	12

Churches

Third Church of Christ Scientists	Globe	15	21

Hospitals

Heights Hospital, 20th & Ashland	Westinghouse	5	6.5
Wright Clinic, 2407 N. Main	General Electric	15	15

Hotels

Ben Milam Hotel, 1210 Texas Ave.	York	130	220

Offices

Mosler Accept. Corp., 1710 Main	Airtemp	10	12.5
Dr. E. W. Griffey, Med. Arts Bldg.	Frigidaire	.75	.75
Binswanger & Co., 207 N. Main	Kelvinator	7.5	.8
Shell Pet. Co., Bellaire	Frigidaire	32	36.5
Continental Can Co., Canal St.	York	10	13.5
Tiling Service Co., 1913 Chenevert	Frigidaire	1.5	1.5
R. L. Autry, 605 Franklin	Frigidaire	.75	.75
Houston Land & Trust, 1101 Main St.	Carrier	.75	.75
Earle North, 1320 Milam	Carrier	.75	.75
Dr. Francis Vanzandt, Med. Arts Bldg.	Westinghouse	.5	.5
Circle Oil Co., 2nd National Bank Bldg.	Carrier	7	8.5
Woodley Pet. Co., 2nd National Bank Bldg.	General Electric	7.5	8.5
Tex-O-Can Flour, Long Reach	General Electric	2	2
Taubman Supply Co., 7100 Clinton Dr.	York	10	13.5
Houston Ltg. & Power Co., Second Floor	Carrier	32	40
Russ Mitchell, 2302 Jefferson	Westinghouse	1	1.6
Straus Frank, 1618 Fannin	Carrier	15	20
Halliburton Oil Co., Navigation Blvd.	Carrier	7.5	10

Theaters, Halls

Eastwood Theater, Leeland & Telephone	Frick	70	125
Blue Bonnett, Broadway	Interstate	..	25
Jesse Jones Hall, Bagby & Walker	York	220	..

(Houston installations continued on page 18, column 1)

December Ranks Third in Unit Heater Sales

(*Concluded from Page 1, Column 4*)

$2,570,007 in orders, and June a total of $2,336,546.

Orders for systems not self-contained led the air-conditioning group during December, totaling $750,591. Self-contained systems totaled $254,789 during the month, industrial systems $416,564, and human comfort systems of the central-station type $292,494.

Air-washer orders for the month were $76,633, air-filter orders $9,294, and humidifiers $107,240. Orders for refrigeration systems sold to contractors for use in air-conditioning systems totaled $62,697 during the month.

December orders for fans totaled $1,116,512, and for unit heaters $1,142,320. The month ranked third during the year in the unit heater group, but fell to seventh in orders for fans.

Luty & Saylor Named to New Posts at Gar Wood

DETROIT—Appointment of Don J. Luty as assistant general manager of the air-conditioning division of Gar Wood Industries, Inc., and of Norman Saylor as manager of the company's Detroit branch, was announced last week by General Manager Frank H. Dewey.

Mr. Luty has been chief engineer for several years. Mr. Saylor joined the organization last year, devoting his time to branch sales promotion.

Air-Conditioning Orders Booked Total $4,229,134 in December

Item	Value of Orders Booked December	Total, 1936
Total	**$4,229,134**	**$43,566,678**
Air Conditioning Group—Total	**$1,970,302**	**$18,765,168**
Unit Systems—		
Self-contained (shipped substantially complete)	254,789	2,235,208
Not self-contained (shipped in sections), including refrigerating or cooling medium	750,591	6,574,449
Central-station Systems, excluding installation if installed—		
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	292,494	4,947,809
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	416,564	1,280,888
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available	62,697	1,786,941
Air washers, including pumps and motors and controls where furnished	76,633	740,351
Air filters (not including sales of filters used with machinery other than fans)	9,294	210,443
Humidifiers	107,240	989,079
Fan Group—Total	**$1,116,512**	**$14,344,569**
Fans, including bearings, pulleys or couplings (if furnished)—		
For public and semi-public buildings	103,770	1,658,204
For general industrial uses	405,069	4,278,179
For mechanical draft	151,625	1,753,276
For jobber stocks and unknown uses	63,877	714,210
Small housed and propeller fans—		
Direct connected small housed blowers with motors and control (merchandise motors)	120,451	1,478,414
Propeller fans, direct connected and belted (for ventilation only)	200,712	3,462,408
Driving mechanism for general fan use (not reported above)—		
Electric motors and controllers (manufactured or jobbed)	61,567	894,433
Steam engines and steam turbines (manufactured or jobbed)	9,441	105,445
Unit Heater Group—Total	**$1,142,320**	**$10,456,941**
Industrial Type Unit Heaters, including heating element and motors where furnished—		
Equipped with blower-type (centrifugal) fans	168,951	1,559,852
Equipped with propeller-type fans	646,197	5,203,781
School-Room Type Unit Heaters, including heating element and motors and control where furnished	92,299	1,675,113
Indirect Heating Surface (not including unit heater surface)—		
Steel pipe coil type (manufactured or jobbed)	10,781	36,872
Cast iron type (manufactured or jobbed)	6,673	153,317
Copper or aluminum type (manufactured or jobbed)	217,419	1,828,006

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc., as are sold with each.

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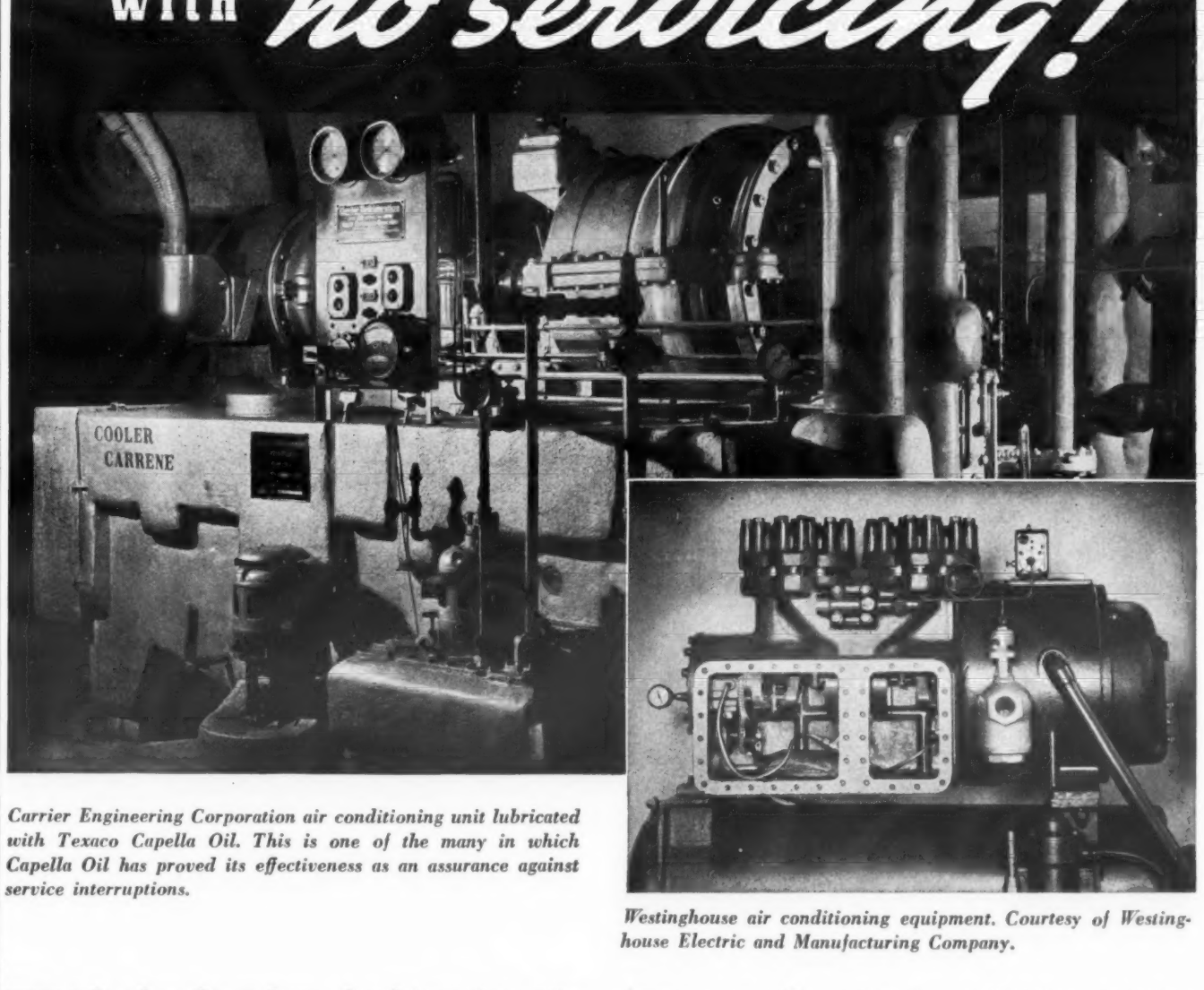

Carrier Engineering Corporation air conditioning unit lubricated with Texaco Capella Oil. This is one of the many in which Capella Oil has proved its effectiveness as an assurance against service interruptions.

Westinghouse air conditioning equipment. Courtesy of Westinghouse Electric and Manufacturing Company.

THAT'S what the makers of refrigerating units expect of lubricating oil.

Developed for this specific service, Texaco CAPELLA Oils make good in it. Flow freely at sub-zero temperatures. They contain no tars, gums, sludging elements.

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Subject CAPELLA to any test you know of. It will "come through" for you, just as it does for us.

Assures smooth, quiet, day-and-night operation for many years.

Use CAPELLA for original charging at your factory. There's a difference in oils—you can prove it with CAPELLA.

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Air Conditioning Lowers Time Lost by Employe Illness 41% in Omaha Office

OMAHA—Installation of air-conditioning equipment in the offices of the sovereign camp of Woodmen of the World here has resulted in decided improvement among employes in time lost on account of sickness, reports V. J. Pakes, secretary.

Comparison of employe absence because of illness during five months of 1935, after air conditioning had been installed, showed a 41% rise in efficiency over the same period of 1933, Mr. Pakes states.

Chart of absences by the organization's 325 employes for the before-and-after air-conditioning period was as follows:

Month	1933 (No Air Conditioning)	1935* (Partial and Complete Conditioning)
March	851 hours	546 hours
April	728 hours	479 hours
May	690 hours	395 hours
June	658 hours	336 hours
July	610 hours	310 hours

*The system was in full operation during June and July, only partially completed during the other months.

During July, the table shows, efficiency reached its highest point, improvement being almost 50% over the same month two years before.

Beneficial effects on employes suffering from hay fever also have been noted since installation of air conditioning, Mr. Pakes reports. In one case, an employe who had suffered from the malady for five years was cured during the first months of the system's operation.

Another result of the system, Mr. Pakes stated, was freedom from fatigue at the end of hot summer days. The usual afternoon physical exhaustion was entirely absent, he said, and with a full day's work from employes, the office's production was preceptibly increased.

Emerson Offers Four Models Of Skeleton Blowers

ST. LOUIS—Skeleton blowers are now being manufactured by Emerson Electric Mfg. Co. for those who prefer to build their own blower housings. Capacities of the four available models range from 1,400 to 4,950 c.f.m. free delivery.

Blower wheels are mounted directly on the motor shaft, and are insulated with rubber, which eliminates noise and provides freedom from troublesome belts and pulleys. An eight-speed control unit on the 17-D, 30-D, and 50-A types provides balanced air circulation by enabling selection of any three of the eight available speeds. Model 14-A has a two-speed snap switch.

Health Experts Record Favor towards Air Conditioning, Prof. Yaglou Reports

BOSTON—Noted health experts went on record in favor of air conditioning before the Harvard University Tercentenary Symposium.

According to Professor Yaglou, Department of Industrial Hygiene, Harvard School of Public Health, the most popular application of air conditioning to the hospital is in nurseries and operating rooms.

Profesor Yaglou states that air conditioning is particularly valuable to the nursery (especially for premature infants) because the best chance for life is in an atmosphere where condition is maintained at 65% relative humidity, and at a "temperature just sufficiently high to keep the body temperature within normal limits."

For the operating room, the prescribed conditions are 80° temperature in summer, and 72° to 75° in winter, with the relative humidity maintained at between 55% and 60%.

These conditions, it was stated, are desirable not merely from the comfort and health angles, but also because of the grave dangers which are imminent from static electric sparks resulting from the use of operating instruments in a dry atmosphere.

An interesting point was made that the significant factor in the elimination of static sparks is **absolute** rather than **relative** humidity, because the electric conductivity of the air varies directly with absolute humidity.

Other hospital departments where air conditioning is of particular assistance are therapy rooms and cabinets, and allergic wards.

Professor Philip Drinker, Department of Industrial Hygiene, Harvard School of Public Health, stated that "Air Conditioning more than justifies itself" by the better health and workmanship resulting from the comfortable, moderate conditions, maintained by air conditioning, so that there is no necessity for pestering hygienists or doctors for actual data in justification of air conditioning which they cannot furnish.

Mr. Drinker expressed the opinion that germ-free conditioned air may be demanded in the future in much the same way and for the same reasons that pure milk and water are present requirements, regulated by law, and assured by inspectors.

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Vol. 3—Master Electric Refrigeration Service Manual—By K. M. Newcum
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Vol. 5—Refrigeration Engineer's Manual—By S. L. Potts
(For the operator of industrial refrigeration systems.)

SCHEDULED FOR PUBLICATION IN 1937

Vol. 6—Commercial Refrigeration Service Manual—By K. M. Newcum
(Now running serially in Air Conditioning and Refrigeration News.)

Vol. 7—1937 Refrigeration and Air Conditioning Directory

Vol. 8—Air Conditioning Made Easy—By F. O. Jordan
(Now running serially in Air Conditioning and Refrigeration News.)

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(Signed) .....

Company .....

Address .....

Type of Business .....

– AIR CONDITIONING SURVEYS –

Houston, Texas (Cont.)

Residences

H. C. Weiss, Shadyside	York	16	25.5
R. L. Blaffer, Sunset Blvd.	Lipman	1.75	2
J. B. Chimine, 1602 Banks	Carrier	.75	.75
Robert Bowles, 3015 Inwood	General Electric	5	5
Warren J. Dole, 3215 Huntington	Frigidaire	.75	.75
J. E. Michaels, 3903 Woodleigh	Frigidaire	.75	.75
John Hamman, Jr., 3009 Chevy Chase	Carrier	.75	.75
Wright Morrow, 3028 S. McGregor	York	2	3.5
I. Ditch, 2414 Truxille	York	1	1
K. F. Hasselman, 2179 Buffalo Dr.	Frigidaire	8	9.5
Chas. J. Crawford, 2915 Chevy Chase	Frigidaire	2	2
R. E. Breeding, 2308 Calumet	Frigidaire	1	1
E. A. Cox, 1835 Dunstan	Frigidaire	1	1
J. O. Hoard	Carrier	.75	.75
Oscar Holcombe, Marlborough Dr.	Westinghouse	2	3.5
Ashley M. Smith, 1533 W. Alabama	Kelvinator	1	1.5
D. H. Straus, 420 Yoakum	Kelvinator	1	1
Walter E. Becker, 2516 Binz	York	3	4.5
F. N. Bullock, 411 Lovett Blvd.	York	7	11
H. G. Shudde, 4823 Austin	Frigidaire	.75	.75
S. I. Miller, 4315 Montrose	Kelvinator	1	1
Names not available of 15 units sold	York	15	15

Restaurants

Ship Ahoy, 1007 Main	York	28	30
Main Cafe, 1607 Main	Frigidaire	5.5	7
Kelly's Grill, 707 Fannin	Carrier	15	20
Virginia Cafe, 6717 Harrisburg	Frigidaire	3.5	4.5
Belvedere Club, 1009 Main	Carrier	22	30
One's A Meal, 2923 Main	York	7.5	10
Nik-N-Dime, Franklin Ave.	Frigidaire	3	3.5
Seaport Cafe, Franklin Ave.	Lipman	8.5	12.5
Seville Restaurant, 1710 McKinney	York	6	10

Stores (Clothing)

Mangel's, 605 Main St.	York	8	13.5
Roxy's Dress Shop, 609 Main	Airtemp	8	12.5
Franklins, 415 Main	Airtemp	15.5	23
Sakowitz Bros., Gulf Bldg.	Carrier	170	250
Hart Nussbaum, 410 Main	Airtemp	7.5	10
Scanlan Bldg., 515 Main	Airtemp	36	48
Everitt-Buelow, Main & Lamar	Frick	..	..

Stores (Grocery)

Weingarten's, Inc., Smith & Elgin	Airtemp	40	48
Minimax Store, Milam & W. Gray	Airtemp	22	28.5
Weingarten's, Inc., W. Grey & Taft	York	35	48

Stores (Drugs)

Esperson Drug, Esperson Bldg.	York	11	3
Walgreen Texas Co., Milam & W. Grey	Carrier	15	20
Liggett's Drug, Main & Texas	Frigidaire	15.5	18.5
Walgreen Texas Co., Main & Richmond	Carrier	15	20
Liggett's Drug, Main & Rusk	Frigidaire	..	..

Stores (Others)

Krupp & Tuffly, Main & Walker	York	40	49
S. H. Kress Co., 701 Main	Carrier	150	200
Vogue Slipper Shop, 507 Main	Carrier	5	6
Corrigan Jewelry, 905 Main	Carrier	14	17
Burt's Shoe Store, 415 Main	Carrier	7.5	11
Burt's Shoe Shop, 607 Main	Carrier	7.5	11

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— FOREIGN TRADE NEWS —

Great Educational Campaign Needed to Sell Refrigeration to People of Java, Kelvinator Representative Reports

By John Zylstra, General Manager
Kelvinator Dept., Brinkmann & Co., Singapore, S. S.

Editor's Note: Much has been written on the subject of refrigeration in the tropics by various individuals, but the following article, from an American trained sales and service engineer, who spent two years on Java, developing a newly established Kelvinator distributorship, should be of interest to many NEWS readers.

JAVA has a year-round temperature of 80-90°, with humidity hovering around 80% and has a crying need for modern refrigeration and air conditioning; a visitor to this country, arriving with a steamer at one of our modern harbor cities, would consider this one of the choicest places for selling refrigeration and will go away with the same idea unless he tries a hand at it himself.

The truth of the matter is that in the tropics, where refrigeration is more necessary to protect health than anywhere else in the world, the surface of refrigeration selling has only been scratched especially as far as commercial installations are concerned.

It will take a great deal of constructive advertising and educational propaganda amongst womens clubs, households, schoolpupils, etc., in order to establish the household refrigerator as a necessity; the majority of our European population is financially well able to buy electric refrigeration, but considers same as a luxury.

The present sales volume of the four distributors, covering 90% of the market, is too small to finance a continuous advertising program and only a special allowance by the manufacturers for a period of one or two years would make such a program possible.

This educational advertising will have to be on somewhat different lines as usually pursued in the United States; very often we see advertisements supplied by the American manufacturer translated in our language and many statements in these ads have no appeal to the local prospect. Saving on specials does not exist, as everybody buys on a monthly account and, therefore, the storekeeper has no daily specials.

Not less important is the cost of electric current, which varies somewhere between 12½ and 60 cents a kwh. according to locality, which makes the lower cost of electric refrigeration in many cases problematical.

GOOD ARGUMENTS

The principal arguments left to work on a prospect are:

The need of some form of refrigeration, and consequently the better method and greater safety in mechanical cooling.

Convenience and ample supply of ice cubes.

Beautiful appearance and pride of possession, which plays a big role in this country as everybody keeps his refrigerator in the dining room and therefore in full view of visiting friends. Pride of possession plays a big role with the wealthy Chinese population. One may be sure that after making a sale to the first member of a Chinese family, more of his relatives will come in and buy probably a more expensive refrigerator.

When we come to commercial refrigeration we meet an entirely different situation as most business places have some form of mechanical cooling. Importers of American equipment never paid much attention to commercial installations as it was easier to sell completely assembled boxes and the prospects probably never knew the difference between a commercial or domestic box. As a result one may see in business establishments from three to six domestic boxes, crammed full with food, where a commercial job at half the price would have given better service.

We have succeeded beyond expectations in selling commercial equipment after a rather difficult start; although the import of American refrigeration equipment in general has decreased more than 30% during 1936, we have doubled our sales volume and about half of this volume has been commercial sales. As a matter of fact we have sold more commercial in two years than all our competitors together in the last six years.

SERVICE PROBLEM

The Dutch public is very slow in buying modern appliances, but is only interested in high quality products and the name and reputation of the firm selling this product plays just as much a role or even more than the trade mark. We are never worried about competition from low priced refrigerators as this has always been a money losing proposition to the importer; most of these are ready for the junkpile in less than six months as only the old established concerns have service facilities and only service their own product.

Our success in selling refrigeration has been due to a great extent also to the fact that I have succeeded in establishing a most efficient service organization with day and night service on commercial jobs, something entirely lacking with other concerns. Native workers are not mechanically minded enough to service modern machinery without constant supervision, especially where diagnosing trouble is concerned and as most of them are analphabetics, a service manual is of no value.

Thanks to the depression, however, we have many technically educated Chinese and Eurasian boys out of work who would consider only white collar jobs in normal times; some of these boys have entered mechanical trades and make excellent service men and incidentally have proven to their employers that higher paid but more efficient labor is more profitable than low paid coolie labor, which according to current ideas is necessary for the proper development of this country.

Sales of sealed units dropped to a point where the profit margin becomes too small for the importer as a result of better service facilities for open units. The initial cost of a sealed unit is already high in this country, while the cost of returning defective units to America for repairs is prohibitive. Defective units are usually junked and replaced with new ones which cuts heavily into the profits of the importer during the warranty period, while charging the customer the full price of a new unit after this warranty period, creates an unfavorable opinion about sealed units. The necessity of keeping a large stock of replacement units of all types and sizes is also a handicap.

NO CONDITIONING DEMAND

We find the public acceptance of air conditioning very slow; the local born population, natives as well as Europeans, are not asking for air conditioning and, therefore, most business places would benefit very little from air conditioning as far as increased patronage is concerned.

Private homes as well as public buildings and offices are well ventilated, have unusually high ceilings and are not suitable for air conditioning without expensive alterations.

The average movie-house seats about 600 to 800 people and plays two shows a day, which makes the returns on the investment for air conditioning questionable, as admission prices are already three times as high as in the U.S.A. and could not be raised without losing patronage.

Air conditioning will have to be popularized first among the European-born population by means of model homes in cooperation with the utility companies as done in the U.S.A. at present; a model home in Singapore, Batavia and Sourabaya would be sufficient for British Malaya and the Netherlands East Indies as nearly every European visits these cities occasionally.

A few properly engineered installations in places open to the general public will do more toward public acceptance than years of advertising and the manufacturer who is able and willing to spend some money for this purpose will be the first one to cash in on the profits of such a venture.

The general belief, that sales of refrigeration equipment in the Orient are not large enough to permit more advertising expenses, is true only to a certain extent. The high cost of a properly equipped engineering department, the absence of finance companies to handle time-payment sales make it possible only for financially strong concerns to engage successfully in the refrigeration business. As a result we are making fairly good prices for our products and are not troubled with price-cutting tactics, as complained about by many distributors at home.

If this condition will continue to exist also in the air-conditioning business, the total number of sales may be lower than expected, but the financial returns will be more satisfactory to the distributor as well as the manufacturer and we are not going to lose the confidence of the prospect who is able to pay a fair price but who expects value for his money.

KRACK HEAT TRANSFER APPLIANCES

SUR-E-FEX

Fin Coils are made for practically all phases of commercial refrigeration. They are self-defrosting, possess ample capacity, thereby reducing operating expense.

When for use with sulphur dioxide (SO2), Freon (F12) or methyl chloride, SUR-E-FEX are made with aluminum fins on tinned copper tubing.

When for use with ammonia, carbon dioxide (CO2) and brine, SUR-E-FEX are made of steel fins on special analysis seamless steel tubing, all joints welded, and are hot-galvanized after fabrication.

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FIN COILS, UNIT COOLERS
AIR CONDITIONING UNITS
923 WEST LAKE STREET • CHICAGO

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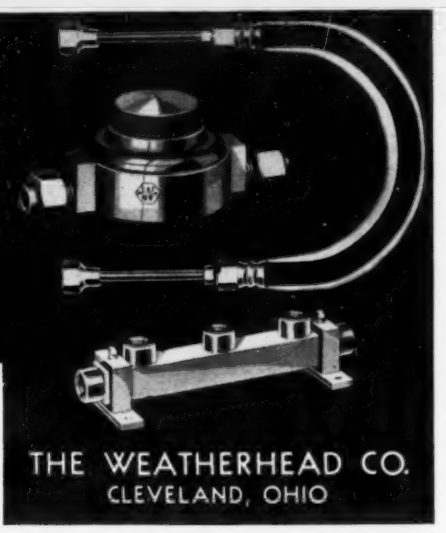

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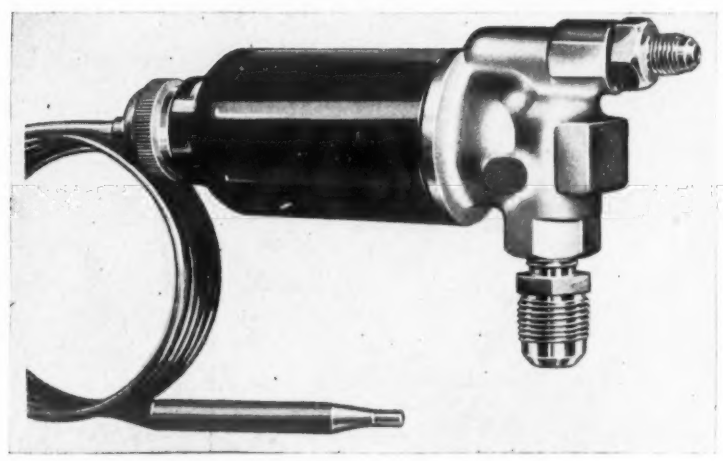

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Service Methods on Copeland Units To Be Covered in Two Articles

Editor's Note: The following is the first of a series of two articles on servicing of Copeland household electric refrigerators, written by K. M. Newcum, author of the MASTER SERVICE MANUAL.

The article published in this issue covers the models made by the company when it was known as Copeland Products, Inc., and which models used Iso-Butane or "Freezol" as the refrigerant.

The second article will cover the more recent models, manufactured by the company operating under the name of Copeland Refrigeration Corp.

Since the systems used in practically all makes of household electric refrigerators are of one of the general types described in the MASTER SERVICE MANUAL, Mr. Newcum simplifies the problem of describing the service complaints and service operations by referring the reader to those parts of the MASTER SERVICE MANUAL which cover the service problems and operations for the type of system involved.

Thus, in order to get the full benefit from this article, it will be necessary for the reader to have a copy of the MASTER SERVICE MANUAL, or a file of the issues of the NEWS in which the information appeared serially before being published in book form.

Further valuable information on Copeland models of all years will be found in the 1936 REFRIGERATION AND AIR CONDITIONING SPECIFICATIONS BOOK, including such service data as refrigerant and oil charges, belt size, etc.

We are indebted also to B. G. Hyatt, Copeland service manager, for the additional information and data which he supplied, and which is being published with this first article.

INSTALLATION AND SERVICE METHODS

Design and Service Instructions On Early Copeland Models

BY K. M. NEWCUM

The Copeland household electric refrigerating system is shown in Fig. 1. The compressor is of the reciprocating type with a standard crankshaft and connecting rod assembly.

A sylphon seal is used on these models (see Fig. 2) and it is of the non-revolving type as discussed on page 48 of the 1936 MASTER SERVICE MANUAL and is subject to the general repair and service conditions given in Paragraph 55 of the MASTER SERVICE MANUAL.

Fig. 3 shows the piston assembly used in all models prior to 1928. Note the piston valve part No. 131.

Piston assembly used in models later than 1928, is shown in Fig. 4. Note the piston valve disc and retainer.

The crankshaft assembly is shown in Fig. 5.

Discharge valve assembly shown in Fig. 6 is of the disc type. The normal lift of the valve disc is limited by the retainer No. 140 against the compression of the small spring No. 137. The larger spring part No. 138 is assembled between the retainer No. 40 and a space provided in the cylinder head. The purpose of the larger spring is to provide additional lift, should oil or liquid refrigerant be forced through the discharge valve.

This discharge valve may be repaired or serviced in accordance with the general instructions given in Paragraph 50 of the 1936 MASTER SERVICE MANUAL.

The air-cooled condenser, although made in several different shapes on the several models, is standard and requires only cleaning by the service man. The importance of this is discussed in Paragraph 62 of the 1936 MASTER SERVICE MANUAL.

Liquid receiver on these early Copeland systems is of the vertical type as shown in Fig. 1 and is fitted with an extra large internal liquid strainer.

The condensing unit is equipped with the three standard shut-off service valves.

The Copeland evaporator or cooling tank is of the dry expansion type and the refrigerant is controlled by an automatic expansion valve. The cooling tank is filled with a non-freezing solution of either 40% denatured alcohol or chemically pure glycerine, and 60% water. This mixture is suitable for temperatures encountered in domestic refrigeration work.

The alcohol should be of the highest grade possible with least possible odor. The glycerine should also be chemically pure—(C.P.). Commercial glycerine should not be used.

Having all the necessary features, the Copeland household system would be classed as a Type "3A" system as shown on page 223, Fig. 133—MASTER SERVICE MANUAL, and service complaints and operations given in the MANUAL under Type 3A system would apply.

Copeland systems of this date use Iso-Butane, under the trade name of Freezol, as a refrigerant.

Freezol compares very favorably with SO_2 from the standpoint of operating back and head pressures. It has a boiling point of 10° F. at normal atmospheric pressure. Sulphur dioxide boils at 14° F. under the same condition.

The operating back pressure of a Copeland system is between 3 inches and 8 inches of vacuum. However, the general rules for the correct expansion valve setting as given in Paragraph 66, page 86 of the MASTER SERVICE MANUAL should be observed.

The latent heat of Freezol also compares favorably with SO_2. At 5° F. the latent heat for SO_2 is given as 170.6 and for Freezol, 173.2.

Freezol has an odor similar to methyl chloride. It may be ignited with a flame when mixed with air. The most positive test for Freezol leaks, is by applying either heavy oil or soap suds completely over every joint including the seal.

Three Copeland expansion valves are shown in Figs. 7, 8, and 9.

Number 3620A, Fig. 7, is of the bellows type. It is adjustable by turning adjustment screw "L." Turning this adjustment to the right increases the back pressure and vice versa.

Expansion valve No. 3450A may be adjusted by turning pressure adjusting cap "M," Fig. 8. Turning adjusting cap "M" clockwise increases the back pressure and vice versa.

Valve No. 3500A, Fig. 9, is of the diaphragm type. The back pressure on this valve may be increased by turning adjusting screw "L" to the right and vice versa.

A view of the Copeland Coldial is shown by Fig. 10. For normal operation, the pointer should be set on No. 1.

Following are instructions for the installation and adjustment of the Coldial:

1. Install to bulb "H" in the hole in fitting "I." Do not tighten screws "J" at this time.

2. Remove the cotter pin "B" from rod "N."

3. Install dial rod "N" in bearing "M." Do not install the cotter pin at this time.

4. Install adjusting yoke 'D" on the end of rod "N" and tighten lock nut "C."

5. Insert the forked ends of adjusting yoke "D" in the holes on each end of Yoke collar "O."

6. Install cotter pin "B."

7. Turn indicator "A" to position No. 7.

8. Hold Yoke collar "O" in position and turn body of control to the left as far as it will go, or until the Yoke collar bears against the forked ends of Yoke "D."

9. With indicator "A" on position 7, tighten clamp screws "J."

10. Turn indicator back to position 1 for normal operation.

Copeland 1930 Cold Hold evaporator cooling solution capacities are given in Table 1, and 1931 evaporator and capacities are given in Table 2.

(Concluded on Page 21, Column 1)

Cooling Solution Capacities For 1930 Models (Table 1)

SELF-CONTAINED SYSTEMS

Cold-Hold	Used in Refrig-erator	Approx. Solution Capacity by Weight	Approx. Solution Capacity in Gals. & Pts.
AE-45	AE-45	8 lb. 4 oz.	7⅞ pt.
AE-55	AE-55	8 lb. 4 oz.	7⅞ pt.
A-45	A-45 P-45	8 lb. 2 oz.	7¾ pt.
A-55	A-55 P-55 A-66 P-66 D-66	15 lb. 6 oz.	1 gal. 7 pt.
A-9	D-9	25 lb. 5 oz.	3 gal.
A-11	D-11	33 lb. 3 oz.	4 gal.
A-15	D-15	43 lb. 4 oz.	5 gal. 1⅔ pt.

REMOTE SYSTEMS

Cold-Hold	Used with System	Approx. Solution Capacity by Weight	Approx. Solution Capacity in Gals. & Pts.
No. 7	No. 71	22 lb. 5 oz.	2 gal. 6⅓ pt.
No. 10	No. 101	27 lb. 12 oz.	3 gal. 2⅔ pt.
No. 15	No. 151	33 lb. 3 oz.	4 gal.
No. 30	No. 302	43 lb. 4 oz.	5 gal. 1⅔ pt.
No. 40	No. 402	113 lb.	13 gal. 4¼ pt.

Cooling Solution Capacities For 1931 Models (Table 2)

SELF-CONTAINED SYSTEMS

Cold-hold	Used in Refrig-erator	Approx. Solution Capacity by Weight	Approx. Solution Capacity in Gals. & Pts.
A-411	A-411 A-521	8 lb. 2 oz.	7¾ pts.
A-551	A-551 P-551 A-701 P-701	15 lb. 6 oz.	1 gal. 7 pts.
D-661	D-661	15 lb. 6 oz.	1 gal. 7 pts.
E-661	E-661	15 lb. 6 oz.	1 gal. 7 pts.
D-901	D-901	25 lb. 5 oz.	3 gal.
E-901	E-901	25 lb. 5 oz.	3 gal.
E-152	E-152	25 lb. 5 oz.	3 gal.

REMOTE SYSTEMS

Cold-hold	Used with System	Approx. Solution Capacity by Weight	Approx. Solution Capacity in Gals. & Pts.
No. 14	No. 14	8 lb. 2 oz.	7¾ pts.
No. 17	No. 17	22 lb.	2 gal. 6 pts.
No. 110	No. 110	25 lb.	3 gal. 1 pt.
No. 115	No. 115	31 lb.	3 gal. 7 pts.
No. 130	No. 130	42 lb.	5 gal. 2 pts.
No. 140	No. 140	109 lb.	13 gal. 5 pts.

Fig. 1—Refrigeration Cycle

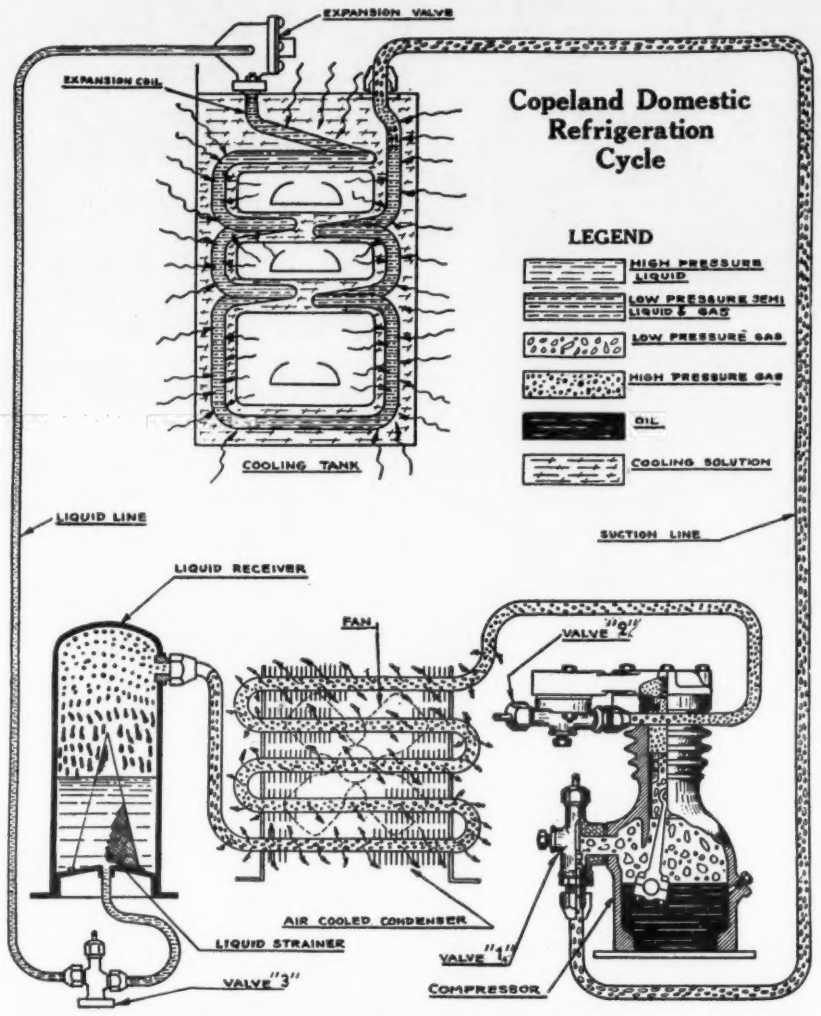

Fig. 1. Copeland refrigeration cycle in household unit, showing location of Valves Nos. 1, 2, and 3, making it Type "3A" system as described in the Master Service Manual.

Fig. 2—Compressor Construction, Showing Seal

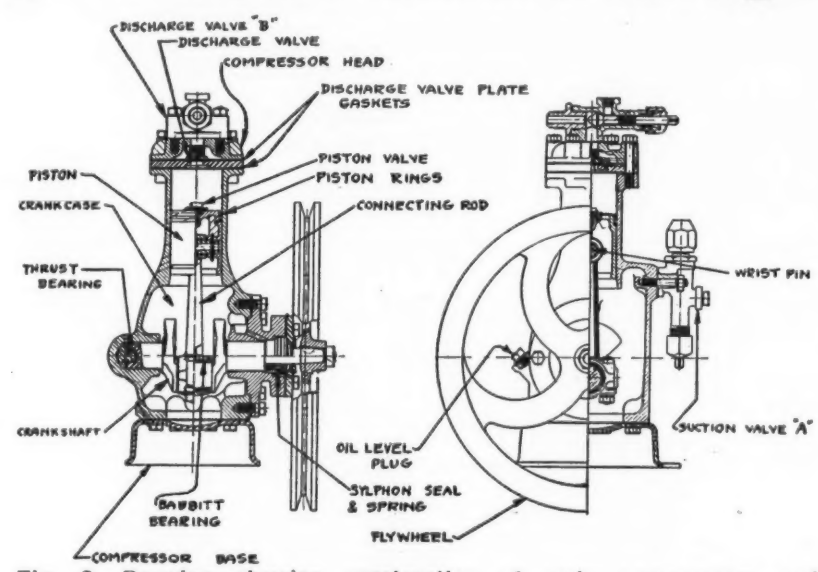

Fig. 2. Drawing showing construction of early compressors, and illustrating use of stationary sylphon seal.

Fig. 3—Piston Assembly

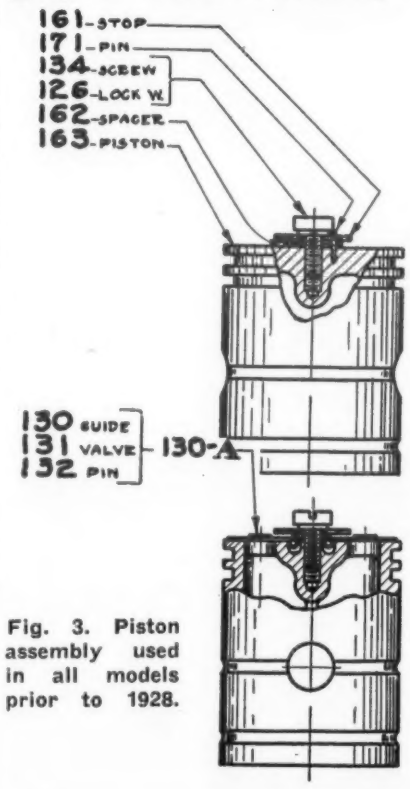

Fig. 3. Piston assembly used in all models prior to 1928.

Fig. 4—Later Piston

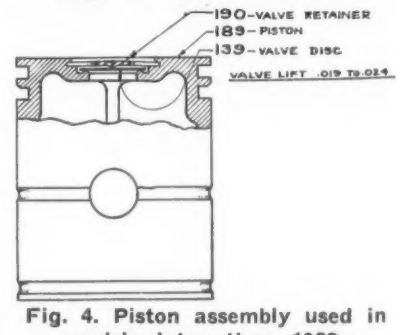

Fig. 4. Piston assembly used in models later than 1928.

Fig. 6—Discharge Valve

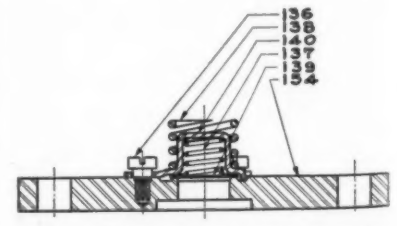

Fig. 6. Discharge valve assembly for models of 1928 and later is of the disc type.

Fig. 5—Crankshaft Assembly

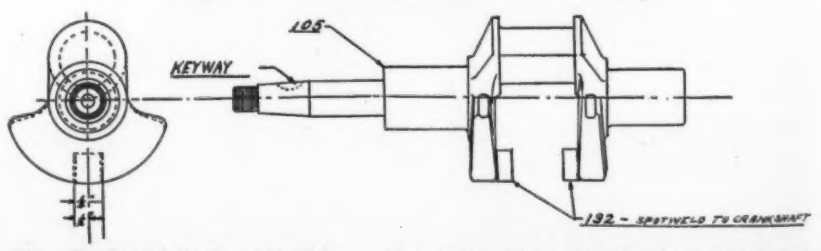

Fig. 5. Crankshaft assembly and construction, Copeland compressor.

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History of Design Changes in Copeland Household Units

By Ben Hyatt, Service Manager, Copeland Refrigeration Corp.

The first Copeland production units were built in Flint, Mich. in 1922. About 1924 the factory was moved to Detroit. Copeland has enjoyed a steady, uninterrupted production of both household and commercial units ever since.

The Copeland factory was moved to Mt. Clemens, Mich., about 1928 and in December, 1934, the factory returned to Detroit, Mich., its present location.

The household units manufactured by the Copeland Sales Company of Detroit and Mt. Clemens up to 1932 were all charged with Iso-Butane (or Freezol). In 1932 part of the Copeland units were charged with Methyl Chloride and part of them with Freezol.

The Freezol units were used only in the cabinets having cold-holds or brine tanks installed in them as the low side.

Methyl chloride was used by Copeland for the first time in some of the household units of 1932 using the direct expansion evaporator as a low side.

The serial number plates on the base of the condensing units are stamped showing the kind of refrigerant used and the amount.

It would be well for the service men to check the serial number plate and recharge the unit with the kind of refrigerant that Copeland intended should be used in their units.

The very early Copeland units were mounted on a heavy iron base and the condensing coil consisted of four rows of ¼-inch tubing enclosed in a metal chimney. This unit was built until 1926 and was known as Models "A" and "B."

In 1926 a lighter base was designed and a new condensing coil was employed. The base was made of heavy flat steel with a wooden sub-base for mounting the compressor and motor.

The condensing coil was made of 7/16-inch tubing wound in an oval shape and was mounted in the rear of the motor and compressor. This model was known as "C" and "D" and was manufactured during 1926 and 1927.

You will note that the same compressor was used from 1922 through 1929 with changes made in the piston design and improvements made in the discharge valve.

In 1930 the inverted head compressor with a flat base was employed for the first time and was used until the latter part of 1935 with many improvements being made during that time.

In 1932 Copeland manufactured a smaller compressor for the first time, being 1½-inch bore by 1½-inch stroke, used on Model 442 and P402 using methyl chloride as a refrigerant.

In 1934 and 1935 the condensing unit used in Copeland cabinets used the 1½-inch bore compressor in the smaller size cabinet and the 2-inch bore compressor in the larger size cabinets.

During 1935 Copeland engineers designed and developed the twin-cylinder compressor which is now in production. This compressor was used in Copeland units starting the latter part of 1935. It is a twin-cylinder compressor having a bore of 1¼-inch and a stroke of 1⅛ inches.

This compressor and condensing unit will be discussed in a later issue and separate from the early type of compressors and units manufactured by the Copeland Sales Company which, at that time, was located in Mt. Clemens.

Fig. 10—Installation of Copeland 'Coldial'

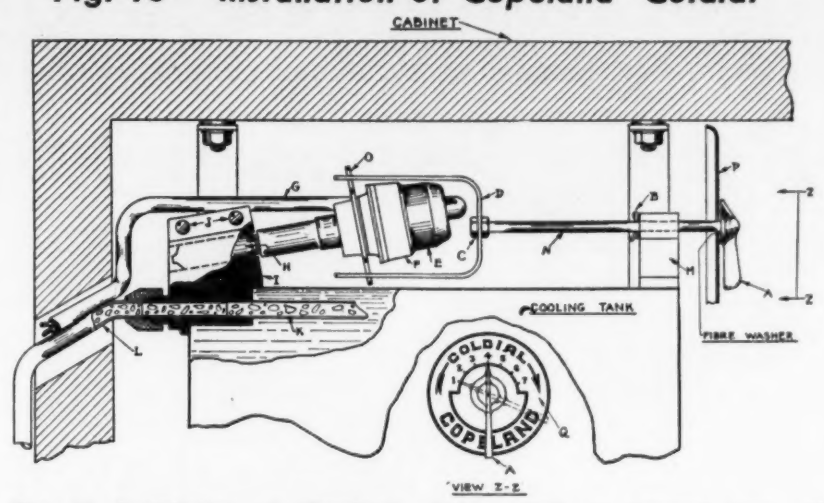


Fig. 10. Installation of 'Copeland Coldial' (1930). (A) Indicator at tank front. (B) Cotter pin for holding the dial rod in position. (C) Nut which locks N to D. (D) Control adjusting yoke. (E) Bakelite terminal cover. (F) Bakelite control body. (G) Control cable. (H) Control bulb containing freezing solution. (I) Outlet fitting. Bulb is clamped here. (J) Control clamping screws. (K) Expansion coil. (L) Suction line to the compressor. (M) Dial rod bearing. (N) Coldial rod. (O) Control yoke collar. (P) Front tank baffle and dial. (Q) Coldial. (Z-Z) Front view of Coldial.

Fig. 11—Control Arrangement on Model 215

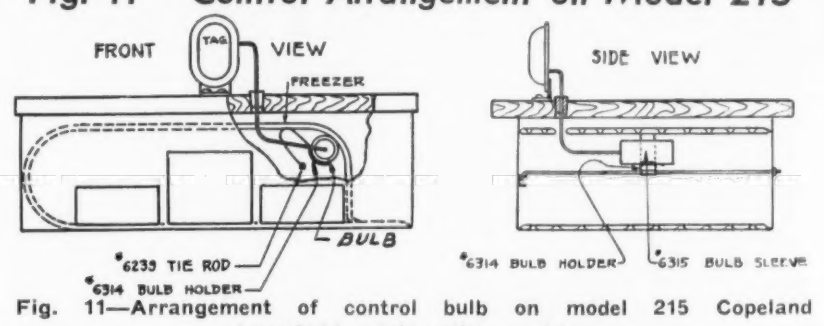


Fig. 11—Arrangement of control bulb on model 215 Copeland household refrigeration system.

INSTALLATION AND SERVICE METHODS

Copeland's Model 215 Had Different Design & Used Expansion Valve

(Concluded from Page 20, Column 5)

Model 215 Copeland household system differs from the regular models previously discussed.

The condensing unit is mounted on the top of a wood base and the evaporator is mounted on the under side of this same base. This entire assembly fits into the top of the cabinet and may be completely removed as a unit.

The evaporator is of the dry expansion type and does not use a cooling solution. The refrigerant is controlled by an expansion valve. The temperature is controlled by a thermostat.

The condensing unit is equipped with only two valves. Valve 1 (as shown in Fig. 1) is not provided, but in its place is a compressor flange which is bolted to the suction port where the valve would ordinarily be.

The flange has a 7/16 inch S.A.E. connection to which the suction line is connected. The flange is also provided with a ⅛-inch female pipe tapping, fitted with a brass plug. This is to provide a connection for the compound gauge.

Valves No. 2 and No. 3 are the same as found on a standard condensing unit.

To install a compound gauge in a model 215 unit, it is necessary to close liquid receiver valve No. 3 and operate the compressor for several minutes to remove the liquid from the liquid line and gas from the evaporator. The compressor is then stopped. Valve No. 3 is then cracked open, then closed to allow sufficient refrigerant in the evaporator to break the vacuum. This condition must be estimated. Remove the plug from the flange and install the gauge or gauge connection. Valve No. 3 may now be opened to check the normal operating conditions.

It is recommended that where frequent service is necessary that the compressor flange be removed and replaced with a standard two-way double shut-off service valve. The flare nut on the suction line is 7/16 inch S.A.E. With a standard shut-off valve installed, the system would be a regular type 3A system and service complaints and operations given under type 3A in the MASTER SERVICE MANUAL would apply.

Fig. 7—No. 3620-A Valve

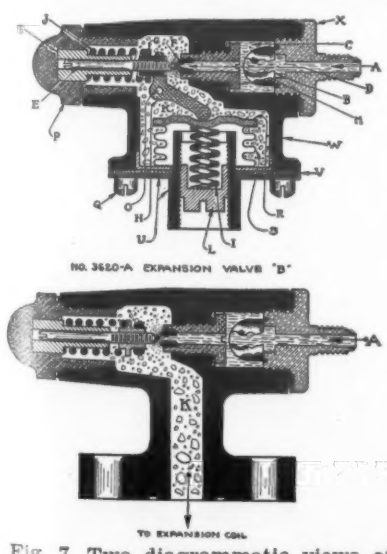


Fig. 7. Two diagrammatic views of No. 3620-A Copeland expansion valve. (A) Inlet liquid orifice. (B) Liquid strainer. (C) Liquid space. (D) Liquid orifice. (E) Needle valve. (F) Needle valve seat. (G) Needle valve stop. (H) Needle valve lever. (I) Valve opening spring. (J) Valve closing spring. (K) Semi-liquid refrigerant chamber. (L) Pressure adjusting screw. (M) Removable valve seat retainer. (N) Removable liquid line connection and strainer assembly. (O) Valve lever pivot pin. (P) Removable valve stem guide and valve closing spring holding assembly. (Q) Sylphon retaining plate cap screws. (R) Sylphon plate. (S) Sylphon. (T) Inner valve stem guide. (U) Adjusting screw plate assembly. (V) Fiber gasket. (W) Main valve body. (X) Connection for ¼-inch liquid line tubing.

Fig. 12—Tag Control

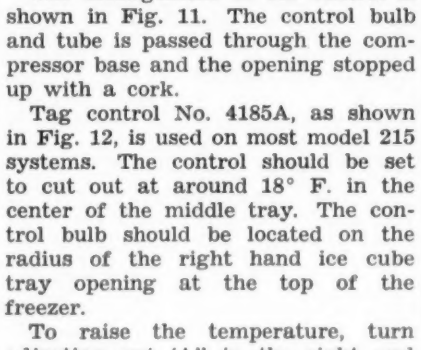


Fig. 12. Tag temperature control used on 215 models.

The correct charge of Freezol (Iso-Butane) for this model is 20 ounces. The oil charge is ⅞ of a pint. The motor is ⅛ hp.

To adjust the expansion valve on a model 215, it is necessary to tip the assembly forward in the cabinet to an agle af obtu 30° and place a block of wood between the cabinet and compressor base to hold the unit at this angle.

The arrangement of the control is shown in Fig. 11. The control bulb and tube is passed through the compressor base and the opening stopped up with a cork.

Tag control No. 4185A, as shown in Fig. 12, is used on most model 215 systems. The control should be set to cut out at around 18° F. in the center of the middle tray. The control bulb should be located on the radius of the right hand ice cube tray opening at the top of the freezer.

To raise the temperature, turn adjusting nut 'A" to the right and vice versa.

If the control operates on short cycles or fails to snap properly, it is an indication that adjusting screw "B" Fig. 12, is out of adjustment.

The diaphragm must snap before the bakelite piece "D" touches the contact arms "E" as the control cuts out. At the time the snap occurs, there should be approximately 1/32 inch clearance between "D" and "E."

To obtain this clearance, turn screw "B" to the right about a quarter of a turn at a time and recheck for snap action.

As the control cuts in, the diaphragm must snap before the points on the contact arms make contact with the terminal posts "F." There should be at least ⅛ inch clearance at the time of the snap.

Recheck the snap out and in several times as they must balance through the correct adjustment of screw "B."

The adjustment "C" controls the differential. Occasionally it is necessary to turn adjustment "C" ⅛ to ¼ of a turn to the left to help balance adjustment "B." Never turn adjustment "C" to right.

Some of the model 215 units were converted into remote installations.

This conversion consisted of installing a double shut-off valve on the compressor (valve No. 1), installing the compressor, receiver, and condenser on a new wooden base with legs. The condensing unit is installed in some remote spot.

Fig. 8—No. 3450-A Valve

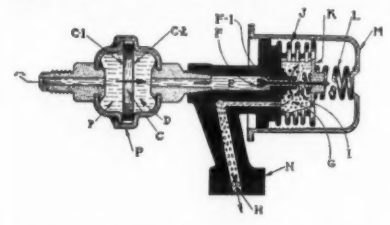


Fig. 8. Diagram of 3450-A expansion valve. (A) Orifice where refrigerant enters the expansion valve. (B-D) Strainer body chamber. (C) Felt strainer pad. (C1-C2) Brass strainer screens. (E) Needle valve chamber. (F) Needle valve. (F1) Needle valve seat. (G) Sylphon semi-liquid chamber. (H) Passage to expansion coil. (I) Valve closing spring. (J) Sylphon. (K) Sylphon plate. (L) Valve opening spring . (M) Pressure adjusting screw cap. (N) Expansion valve body. (P) Strainer body assembly.

Fig. 9—No. 3500-A Valve

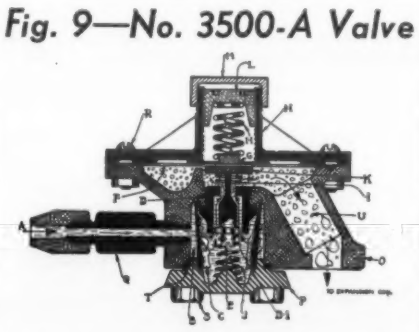
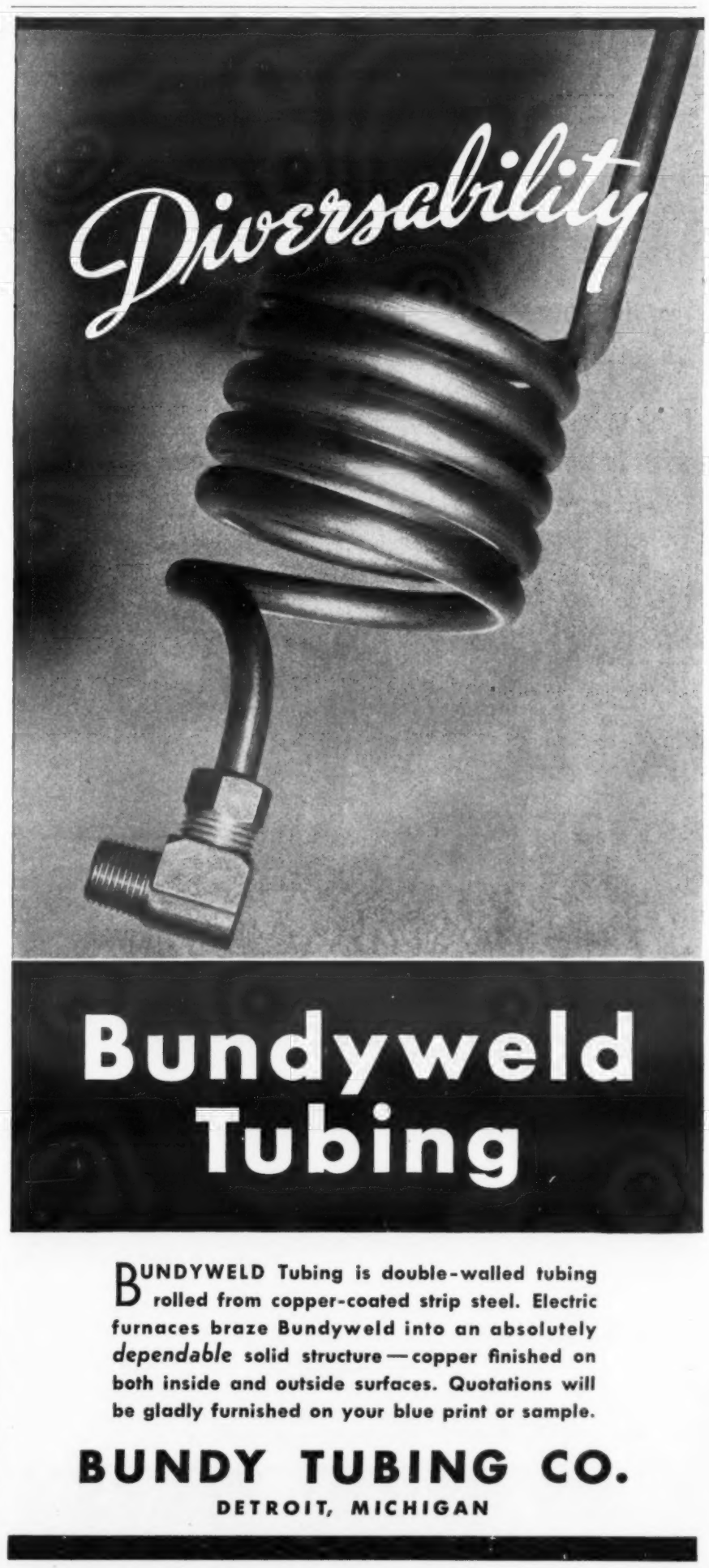


Fig. 9. No. 3500-A expansion valve assembly. (A) Inlet orifice for high pressure liquid. (B) Liquid strainer chamber. (C) Wire gauze liquid strainer. (D) Removable valve seat and guide. (D-1) Valve orifice. (E) Needle valve. (F) Diaphragm. (G) Diaphragm push plate. (H) Valve opening spring. (I) Diaphragm balance spring. (J) Valve closing spring. (K) Valve push button. (L) Pressure adjusting screw. (M) Sealing cap. (N) Top half of valve body. (O) Bottom half of valve body. (P) Strainer chamber sealing cap. (Q) High pressure liquid line fitting. (R) Body holding screws. (S) Sealing cap cover cap screws. (T) Lead sealing gasket. (U) Low pressure semi-liquid chamber.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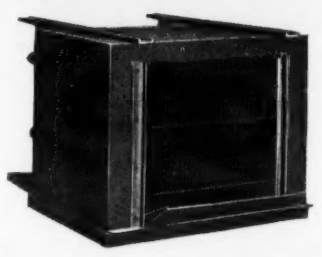

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Revised Fort Wayne Heating Code Refused Passage

FT. WAYNE, Ind.—Revision of Fort Wayne's proposed 75-page ordinance to govern installation of heating equipment was refused passage Feb. 2, when representatives of building trades objected that it did not clarify the jurisdiction of firms installing modern air-conditioning and heating equipment.

The proposed ordinance has been withdrawn and sponsors will confer with objectors in an effort to straighten out differences. It is then to be sent back to the rules, regulations, and ordinances committee of the council.

As drawn, the proposed ordinance is patterned after the Minneapolis building codes.

Detroit Insulation Contractors Form Association

DETROIT — Insulation Contractors Association of Detroit recently was formed at a meeting of local insulation contractors at the Lee Plaza. Purpose of the association is to improve the insulation conditions in the City of Detroit and suburban areas.

The following officers were elected at the meeting: Earl Trece, Rock Rock Wool Insulating Co., president; Ralph Fletcher, Insulation Industries, secretary; Farnham Haeger, Air-O-Cel Industries, Inc., treasurer.

Model Greyhound Terminal Installs Air-Conditioning

NEW ORLEANS—The Equitable Equipment Co. has installed air-conditioning equipment in the new Teche Greyhound bus terminal just opened here. The terminal is considered the most modern in the country, and is expected to serve as a general model for similar stations elsewhere.

Matt Canning & Associates were the air-conditioning engineers.

Gruitch Heads Airtemp's Dayton Laboratory Activities

DAYTON—J. M. Gruitch has been placed in complete charge of all laboratory activities at the Dayton plant of Airtemp Division, Chrysler Corp., according to R. G. Wyld, Airtemp's executive engineer. The appointment became effective Feb. 4.

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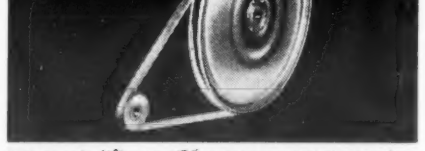

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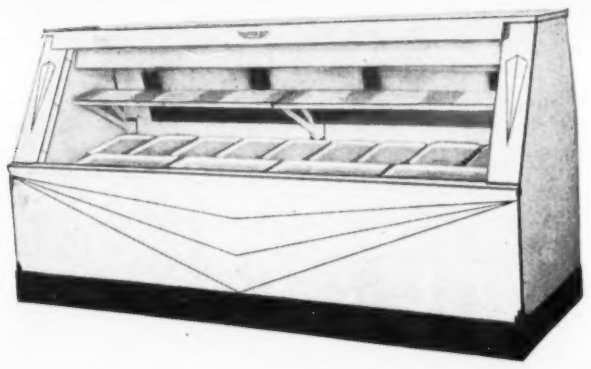

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— AIR CONDITIONING MADE EASY —

Operation of Automatic Heating Controls; "Zoning" in Large Buildings

SECTION NO. 7 (Continued)

Heating

BY F. O. JORDAN

Automatic Controls & Zoning

Generally, controls are for the purpose of maintaining a desired room condition, or for safety.

One of the simplest methods of controlling, indirectly, the temperature in the building which is heated through the medium of a hand-fired steam boiler is obtained through the use of a steam pressure regulator consisting of a diaphragm or bellows, and a weighted lever through which the steam pressure actuates the draft damper so that a fairly constant steam pressure is maintained. With this control, rising pressures tend to shut off the draft, while falling pressures open the draft.

For the coal-fired hot water boiler, a similar draft damper control is used which is actuated by the temperature of the water in the supply main so that a practically constant water temperature is maintained. This control may be provided with a feature whereby an outside thermostat regulates the temperature control, so that the water temperature within the system is regulated to suitable outside temperature.

A more satisfactory type of control which is very generally used consists of a room thermostat located in the living quarters, which regulates the heat input of the system, so as to maintain a practically constant room temperature.

In case of coal-fired equipment, the thermostat operates the draft damper through the action of a damper motor which usually is operated by electricity.

In the case of stoker, oil, or gas-fired equipment, the thermostat controls the operation of the stoker or burner, stepping operation up to the high speed or the high combustion rate upon falling temperature, and slowing operation down to the low speed or the low combustion rate (or stopping operation altogether, in the case of some oil burners) upon rising temperatures.

HOT AIR SYSTEMS

In the case of the hot air furnace which is provided with forced air circulation, it is customary to provide a "furnacestat" in the bonnet, which places the circulating fan in operation when the temperature in the bonnet has risen above a predetermined point after the room thermostat has opened the draft damper, or placed the stoker or burner in operation, as the case may be.

With this arrangement, cold drafts cannot be delivered into the conditioned space, because the fan cannot operate unless the bonnet temperature is high enough.

For the system in which the heating of the building is accomplished by means of an air heating and circulating unit containing air circulating fan and a steam coil, it is customary to provide a pressure control which starts the circulating fan when the steam pressure in the heating coil has reached a predetermined point after the room thermostat has opened the draft, or placed the stoker or burner in operation.

With this arrangement cold drafts cannot be delivered into the conditioned space, because the fan cannot operate unless there is steam in the coil.

When the air-conditioning unit heats through the medium of a hot water coil, the above result is obtained by providing a thermostat which starts the fan when the water temperature within the coil has reached a predetermined point.

With these arrangements, the functioning of the controls is as follows: First, the room thermostat starts the stoker or burner, or opens the draft in the case of hand-fired coal burning equipment. Next, the fan control starts the fan, as soon as the steam pressure or water temperature within the heating coil justifies fan operation.

In case of the hot water system with which a circulator is used, the circulator motor is connected to the room thermostat, so that it is placed in operation with the opening of the draft, or the starting of the stoker or burner.

Clock-type room thermostats are available which will control the heating system to maintain different temperatures at different times of the day, usually 70° F. during the waking hours, and 60° F. during the period of slumber.

EVEN TEMPERATURES

Due to the fact that the room thermostat requires a temperature change in order to cause it to function, and because of the fact that it is impossible for it to hold the room temperature exactly constant there must be a considerable lag in time between the functioning of the thermostat and the time when the change in rate of heat input can affect the room temperature.

In an attempt to level out this temperature, room thermostats have been developed which operate the heating equipment during a brief portion of every hour regardless of room temperature, while other thermostats are in use which contain a small heating element which gives the thermostat a lead on the temperature rise by causing it to function more quickly than will the thermostat which must await an appreciable rise in room temperature.

VARYING LOADS

All of the methods of control which have been discussed are based upon controlling the entire heating system by the air temperature at any point. This arrangement is quite satisfactory if the heating equipment for each portion of the building is properly proportioned to the heat loss in that portion, and if the heat loads upon all portions of the building vary approximately together.

However, operation may not be satisfactory when the load periods in the various portions are not approximately the same. This is specially true in the larger building.

For example, suppose that a building is composed of two wings, wing "A" and wing "B." Suppose that the wings are so located that wing "A" is heavily exposed while wing "B" is sheltered when the wind is in one direction, but that wing "B" is exposed while "A" is protected, when the wind is from some other quarter.

Obviously, control from one point cannot maintain, even approximately, the same temperature in both wings under such unbalanced load periods, so that it will be necessary to locate a thermostat in each wing to regulate the heating equipment for that wing.

The building which is divided by a corridor or wall, so that the rooms which are on one side can be heavily exposed to winds or sunshine from which the other side is protected, presents the same problem.

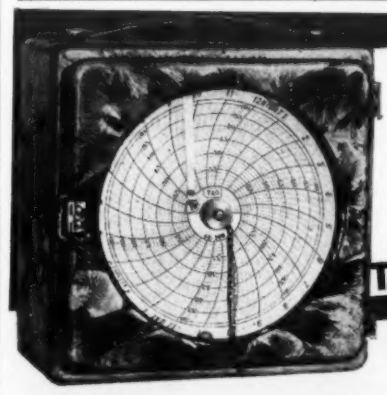
For this reason, the larger building usually is divided into two or more zones, the heating equipment for each zone being controlled from a key point within that zone. The zones should be so arranged that the load periods of all rooms within one zone are approximately the same.

The control point should be in the room having the *longest* load period, or within the room in which constant temperature is the most desirable.

In some cases, zoning is extended to the ultimate extreme by providing individual automatic temperature control for each room, or even each portion of a room, so that a room or portion of a room may constitute a zone.

In the case of the steam or hot water direct radiation heating system,

(Concluded on Page 23, Column 1)



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Quebec Drug Maker Finds Publicity One Of Best Benefits of Air Conditioning

WESTMOUNT, Quebec, Canada—A combined comfort and process air-conditioning system was installed recently for the Charles E. Frosst Pharmaceutical Co. in their four-story building here.

The installation was designed by G. Lorne Wiggs, consulting engineer of Montreal, and was made by B. Trudel and Cie. Frick refrigerating equipment was used.

According to the user, a result of the installation which was very interesting to him was the unexpected return on his investment resulting from the tremendous publicity afforded him by the installation.

Since Westmount is considerably to the northward of the cool summer playgrounds of the Adirondacks, this installation should be significant to those who believe that the "far north" constitutes no market for their product.

Two entirely separate spaces are conditioned by this installation. One of these is the office space, while the other consists of the departments where capsules and effervescent salts are handled. The air-conditioning and circulating equipment for each space forms a separate system within itself, but both systems are served by one refrigerating unit.

The office space consists of a general office, four private offices, a conference room, and a ladies rest room. The total volume of these rooms is approximately 56,000 cu. ft., while about 40 persons constitute the normal occupancy.

Cooling load for the office space Mr. Wiggs estimated at 9.3 tons of refrigeration, but it was decided to base the equipment selection for this area upon a load of 11.2 tons, in order to allow intermittent operation, even at peak loads.

The existing steam heating system in the offices made use of direct radiation, and was considered satisfactory.

However, in order to place the heating function under automatic control, indirect steam heating coils were provided in the air-conditioning unit of sufficient capacity to carry about one-half the heating load, while orifice plates were installed in the steam supplies to the radiators which reduce their heating capacity about 50%.

The office air-conditioning unit is provided with a bank of viscous air filters, cross-connected fresh air and recirculating dampers, a steam heating coil, a direct-expansion cooling coil, and a "multiplate" air-circulating fan.

The cooling coil is of the finned type, five rows of tubes deep, with a total capacity of 115,000 B.t.u.'s per hour with Freon at an average temperature of 40° F., and at an air circulation of 3,600 c.f.m.

The total air circulation is 3,600 c.f.m. of which between 400 and 600 c.f.m. is fresh outside air.

The office air-conditioning system has resulted in a decided improvement in working conditions, largely because its use permits doors and windows to remain closed so that the dust and dirt which once entered freely from the adjoining playground and railroad tracks now is eliminated. Here again is brought out one of the many great advantages of

(*Concluded on Page 25, Column 3*)

— AIR CONDITIONING ENGINEERING —

Control System Operation in Zoned Areas

(*Concluded from Page 22, Column 5*)

the usual arrangement is for the thermostat to control the steam or hot water supply to the zone which the thermostat serves, through the agency of a shut-off valve in the supply main for that zone.

With this arrangement, the boiler for the entire system must be provided with an automatic control so that a constant steam pressure or water temperature will be maintained in the supply mains, regardless of the number of zones which may be demanding heat.

In the case of the steam system, a control is used which opens the draft damper or starts the stoker or burner when the steam pressure in the supply main drops below the desired point, while the control for the hot water system functions similarly when the water temperature in the supply main falls too low.

In the case of the forced hot air system in which the air for all zones is heated at one central point, the thermostat for each zone may control the air supply to that zone by means of a motor or solenoid-operated shut-off damper.

With this arrangement, the circulating fan must be of a non-overloading type, or some means must be provided of maintaining a constant static pressure in the main duct, in order to avoid too great a variation in circulating fan motor load. Another disadvantage of this method of control is that the thermostat to a given zone may close the air-supply damper to that zone because the zone temperature is high enough, while air may be necessary for ventilation.

TWO-TEMPERATURE SYSTEM

A more satisfactory but more costly arrangement is to provide two systems, one system carrying tempered air at about room temperature, and the other system carrying air at a much higher temperature. When the temperature within a given zone is high enough, the thermostat closes the damper in the hot air supply to that zone, but opens the damper in the tempered air supply.

With this arrangement, the desired temperature may be maintained, yet a constant air delivery as required for ventilation will be maintained. This two-temperature system has been explained previously under "The Commercial Forced Air Circulation Heating System."

In cases where the central air-heating unit is a hot air furnace, it is necessary to provide a furnace-stat in the bonnet to restrict the draft damper or limit the stoker or burner operation as the air temperature within the bonnet or plenum rises, due to reductions in the demand for hot air by one or more zones.

In cases where the central air heating unit is a steam or hot water coil, a constant air delivery temperature from the coil may be obtained by locating a duct type thermostat in the hot air main duct, which will regulate suitable valves in the steam or hot water supply to the coil.

However, this coil control may be omitted, because the steam pressure regulator, or the hot water temperature controller which must be provided at the boiler for all systems of this type, will restrict the draft or limit the stoker or burner operation, due to the slight rise in steam pressure or water temperature resulting from a decrease in demand for hot air.

A very satisfactory method of temperature control, when the heating is done by forced circulation of hot air through steam or hot water heating coils, is to provide a separate air-heating and circulating system for each zone.

Thus in the case of the residential system, a separate air-heating and circulating unit may be provided for each zone. Effective control may then be obtained by allowing the room thermostat within a given zone to regulate the steam or water supply to the heating coil for that zone (which may result in a cold draft when the fan is in operation, and the steam or hot water supply is cut off), or by arranging the thermostat to stop the fan when the zone temperature rises to a given level.

BY-PASS DAMPER

In cases where air is desired at all times for ventilation, a very satisfactory arrangement is to provide a heating coil by-pass damper which is opened by the zone thermostat when the zone temperature rises to the desired level.

This damper must be so arranged that when it is open, the mixture of heated and by-passed air will enter the room at a temperature which will neither heat the room appreciably, nor produce chilly drafts. With this arrangement, ventilation may be provided at all times, while temperature may be satisfactorily controlled.

With any of these methods of control, a system pressure regulator must be provided (in case of the steam boiler), or a hot water temperature regulator must be provided (in the case of the hot-water boiler) which will restrict the draft damper for the hand-fired installation, or limit the stoker or burner for the mechanically fired installation, upon rises in steam pressure or water temperature resulting from a reduction of heat demand by one or more of the zone-heating units, so that a practically constant steam pressure or water temperature will be maintained in the system.

With this type of system, portions of the building, such as vestibules, garages, etc., which may be heated by direct radiation, are left entirely independent of the zone-heating unit or units, usually a very desirable feature.

OPERATION OF SYSTEM

With the arrangement described in this paragraph, the controls function as follows: When the room temperature at a key point within a given zone rises to a predetermined level, the room thermostat stops the heating effect of the heating unit for that zone, as described above, by stopping the fan, or by shutting off the steam or hot water supply, or opening a by-pass damper. Immediately, there is a slight rise in steam pressure, if the system is a steam system, or in hot water temperature, if the system heats by hot water.

If this rise in steam pressure or water temperature reaches the level at which the boiler pressure or temperature regular is set, the boiler regulator acts to restrict the draft damper, or limit the stoker or burner rate, so that the steam pressure or water temperature is held practically constant for the use of other zones or heating equipment.

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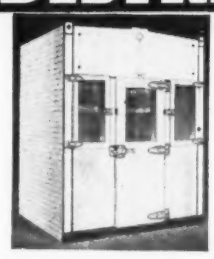

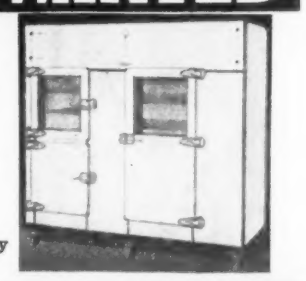

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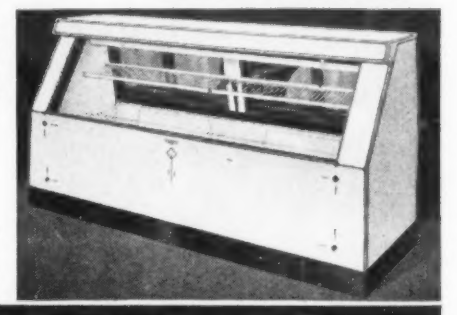

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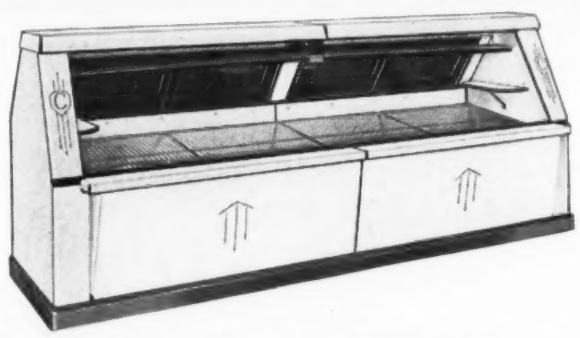

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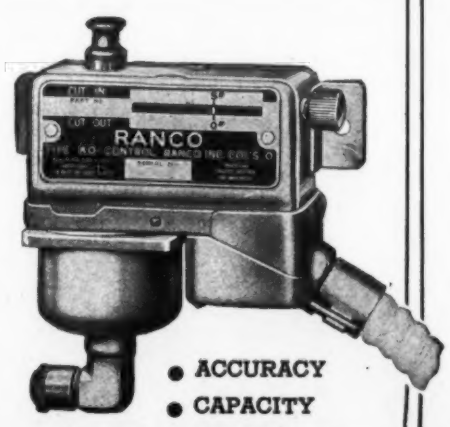

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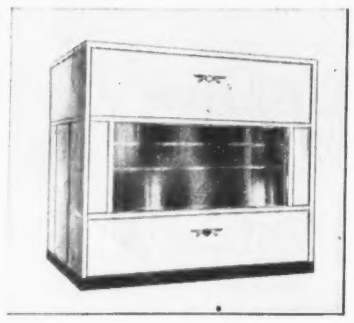

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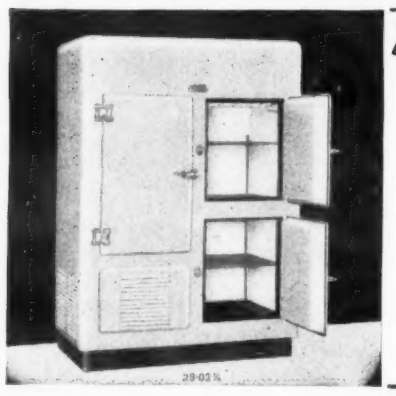

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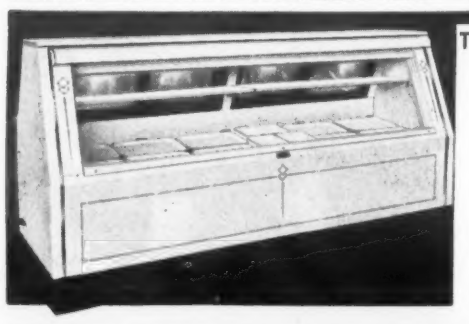

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'Vaporseal' Insulation Marketed by Celotex

CHICAGO—Triple protection against water, moisture, and vapor is claimed for Celotex "Vaporseal" insulating sheathing, a new insulation material recently announced by Celotex Corp.

This new insulation is particularly designed to eliminate the danger of moisture collecting between the outer and inner walls of buildings due to the temperature differences between these two surfaces.

In preparing this Vaporseal sheathing, the Celotex core is first waterproofed in the usual manner. Then both sides and all edges are coated with a special non-sticky asphalt to seal it against moisture. Finally, one side is covered with an aluminum compound as a vapor seal. Throughout this processing, full insulation value of the Celotex core is maintained, say company engineers.

The new sheathing is reputed to be stiffer, stronger, and more easily applied that other Celotex materials. It is claimed that wind infiltration is prevented without the use of building paper. The insulation is also protective against termites and dry rot through treatment with the patented Ferox process.

Celotex Vaporseal insulating is available in standard 4-food which width, and in lengths of from 7 to 12 feet. It is 25/32-inch thick, the same as ordinary wood sheathing which it replaces.

Celotex's national advertising campaign features the new insulation in full page color advertisements in *Saturday Evening Post* and *Collier's*. Similar copy will appear in *Better House and Garden*. Full pages for Celotex will also appear in four architectural magazines and in many building material publications. The agricultural market will be covered in leading farm magazines.

Shook & Fletcher Install Conditioner-Demonstrator

BIRMINGHAM, Ala.—An 8-ton Carrier combination direct expansion and air-washer installation has been made in the offices and workrooms of the new two-story home of Shook & Fletcher Supply Co., Inc., Carrier distributor here. This equipment will be used to air condition the premises and for demonstration purposes.

Shook & Fletcher operates its own sheet metal shop and stock rooms in connection with its air-conditioning business, delivering complete duct work sections from the metal shop on the second floor by crane to trucks waiting below.

Boston Air Conditioning Group Elects New Officers

BOSTON—Election of officers and an inspection tour of the Rice building, Boston's first air-conditioned office building, marked the fourth annual meeting of the Boston Air Conditioning Bureau.

New officers of the organization are Julius Daniels, president; W. D. Wilkinson, vice president; Rudolph Sommers, treasurer; Daniel Ricker, secretary; Col. D. S. Boyden and J. W. Millard, directors.

J. E. O'Neill, sales engineer, pointed out methods of installation used in the Rice building. Other speakers at the annual meeting were F. A. Weinsenbach, Philadelphia; William B. Rice, owner of the building; and Frank A. Merrill, consulting engineer.

Wisconsin Legislature Moves To Condition Assembly Room

MADISON, Wis.—Steps toward air conditioning the assembly chamber of Wisconsin's legislature were taken here last week. A resolution was introduced, asking the state engineer to study the practicability of supplying a "steady flow of cool, pure air" in the chamber of the lower house.

— AIR CONDITIONING ENGINEERING —

Noise Levels of Grilles Discussed In ASHVE Paper; Data for Grille Selection Given

BY F. O. JORDAN

ST. LOUIS—Summarized results of studies of the noise level of grilles of various types and sizes and at different velocities, and data for use in a prescribed method of grille selection, were given in the paper, "The Noise Characteristics of Air Supply Outlets" presented before the recent annual convention of the American Society of Heating and Ventilating Engineers in St. Louis by D. J. Stewart and G. F. Drake, of the Barber-Colman Co.

After the heating or cooling load calculations have been completed, a supply of air temperature has been selected, and the volume of required air determined, the next step in engineering an air-conditioning installation is to determine the velocity at which air may be introduced into the space without objectionable noise or objectionable drafts.

In this discussion, the noise from the fan and duct system itself will be neglected and only the noise produced by the grille considered.

If the fan and duct system is properly constructed and acoustically treated, the noise from this source can be neglected except at extremely low grille velocities. The noise level of the open duct in the tests under consideration was below 23 decibels (db) at an outlet velocity of 1,000 f.p.m.

Since high velocities mean smaller ducts and outlets, it is advantageous economically to use the maximum velocity permitted by the desired noise level or by the distribution characteristics. The selection of the proper velocity requires that the designer have available reliable data on the noise characteristics, applicable to the particular make of outlet it is proposed to use.

Before a final selection can be made, the designer must also have data on the distribution characteristics, but that phase of the subject will not be discussed in this paper.

All intensity figures given in this paper are on the decibel scale and refer to the now generally accepted threshold, 10^{-16} watts (w) per square centimeter.

When air is introduced into a room through a grille, sound energy is produced at the grille; and if the air is at a constant velocity, the sound energy is, for all practical purposes, produced at a constant rate. If there were no reflections, the intensity of the sound would be approximately proportional to the rate at which the energy is generated and inversely to the square of the distance between the grille and the observer.

This is not the case in an ordinary room, for due to partial reflection at the boundaries the intensity of sound at any point in the space builds up immediately to a constant value higher than that which would be indicated by the rule given.

In a large room at a point remote from the source of sound, the intensity can be shown to be substantially proportional to the rate at which sound will be generated, inversely proportional to the number of sound absorption units in the room and independent of the distance from the outlet. It is not satisfactory to consider the grille noise on this latter basis, since the occupants of the room may be very close to the grille.

The authors know of no generally accepted standards as to the place at which sound measurements should be made, but it appears unlikely that an occupant will be nearer than directly in front of the grille, 5 feet from the lower edge of the outlet, this distance measured downward at an angle of 45 degrees. All measurements referred to in this paper were made at this position.

Fig. 1 indicates the manner in which loudness level varies with position.

ROOM ABSORPTION

The effect of the absorption characteristics of the room is shown in Fig. 2. It may be used for any type of grille, with sufficient accuracy for all practical purposes. The sound absorption of the test room is approximately 270 sabins, but all the data shown herein are corrected to an absorption of 100 sabins.

An average room will have an absorption of more than 100 sabins, and failure to correct for this factor will, therefore, give a permissible sound level lower than that which could actually be used. The error in this case is on the side of safety.

The total absorption coefficient can be computed from the usual acoustical formula. A table of the coefficients of most of the usual interior finishes is given on page 331 of "The A.S.H.V.E. Guide, 1936."

LOUDNESS VS. VELOCITY

In Fig. 3 are shown as circles a number of test values of loudness level for a long throw type grille of one square foot area (corrected to a room of 100 sabins absorption) with various face velocities. A curve such as the full line of Fig. 3 might be considered a fair representation of these data.

It should be noted that the curve reaches zero loudness level at about 118 f.p.m. face velocity. This does not mean that no sound energy is produced at this velocity, but that it is at the threshold of audibility in a room of absolute silence. If the room noise level is itself at the threshold, the combination would produce a noise of 3 db. since it would be twice threshold intensity.

CORRECTION FOR GRILLE AREA

Correction must be made for area to obtain the total sound level.

Since the allowable total sound and the required volume of air are usually known, and it is desired to determine the maximum allowable velocity, the family of curves shown in Fig. 4 may be used.

These curves are simply the rela-

(Concluded on Page 25, Column 1)

Effect of Room

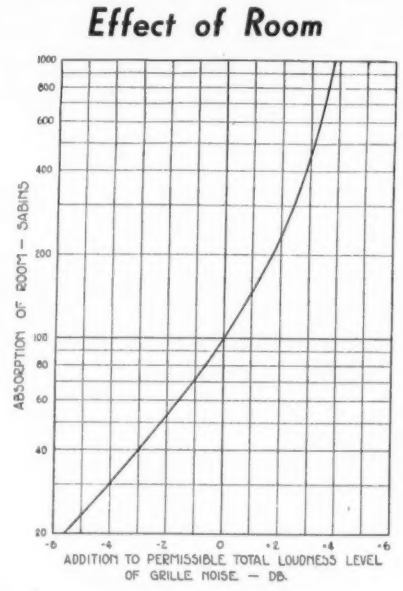

Fig. 2—Decibel correction for room absorption. Referred to room of 100 Sabins.

How Loudness Varies with Position

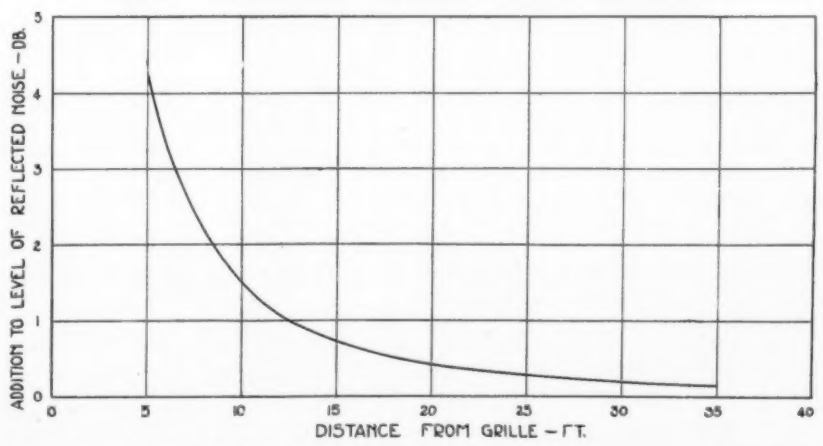

Fig. 1—Decibel addition to loudness level of sound. Room absorption 270 Sabins. Long throw grille.

Figuring Additions to Normal Sound Level of Room by Grilles

(*Concluded from Page 24, Column 5*)

tion between volume of air and face velocity at constant loudness. If the volume and desired total noise are known, the maximum permissible velocity can be directly determined. Fig. 4 is based on the same grille construction as Fig. 3. It is interesting to note that the curves in Fig. 3 are straight lines.

PERMISSIBLE SOUND LEVEL

In order to determine the permissible sound level, it is necessary either to know or assume the noise level of the room without the grille noise (See Table 1 in last week's article, page 23, Feb. 10 issue). In many rooms the noise level will vary, and it is usually necessary to design the system for satisfactory performance with the minimum noise level which it will have when occupied.

If the noise level without the air-conditioning system is known and the permissible noise level with the system in operation is known, the permissible maximum noise level due to the grille itself may be computed. The alignment chart, Fig. 5, solves this problem directly and eliminates the necessity of any computation.

Experience indicates that an increase in noise level of 1 db. (at about 30 db.) can hardly be detected, but that 2 db. increase can be detected. If the fan is started and stopped during occupancy, an increase of more than 1 db. is usually objectionable; and by referring to the chart it is found that this requires that the noise level of the grille be about 5 db. below the noise level of the room without the grille. On the other hand, if the fan runs continuously, an addition of 3 db. or even more is often entirely unobjectionable. An increase of 3 db. in total noise permits the grille noise alone to be equal to the room noise without the grille.

When more than one outlet must be considered, the problem of whether to consider the total air volume or that from one outlet is dependent upon the location of the outlets and the sound absorption characteristics of the room. If two outlets are located some distance apart in a highly absorbent room, the noise level can be computed on the basis of a single outlet.

On the other hand, if the room is small, and especially if it is highly reverberant, the noise level should be computed on the basis of the total volume of all the outlets. As the latter assumption errs in the direction of safety, it is the usual practice.

EXAMPLE

Assume that the load calculations have been made and the supply air temperature selected, and that as a result the volume of supply air has been determined to be 900 c.f.m.

The room in which this system is to be installed is quite reverberant and has an absorption of only 50 sabins. The room noise level without the air-conditioning system has been determined to be 45 db., and the air-conditioning system itself has been quieted so that the noise from it can be neglected.

On account of the small volume of air, it is probable that only one supply outlet will be used in this instance, but even if more than one supply outlet is contemplated it will be wise to consider the total volume of air as concentrated at one point since the absorption coefficient is so low.

The system will not run continuously, and it is required that the additional noise of the grille will not be noticeable.

As previously stated, an increase in the total noise level of approximately 1 db. is not noticeable, and reference to Fig. 5 indicates that the grille noise level must be about 5 db. below the room level or 40 db.

However, the absorption coefficient of this room is only 50 sabins, and reference to Fig. 2 indicates that the permissible level of grille noise must be reduced 2 db. on this account. The net permissible grille noise is thus 38 db., and by referring to Fig. 4 it will be seen that this corresponds to an air velocity of 880 f.p.m.

It is possible that consideration of the flow and distribution characteristics may require a lower velocity, but no higher velocity may be used and still fulfill the requirements as to noise.

Test Values for Long Throw Grille

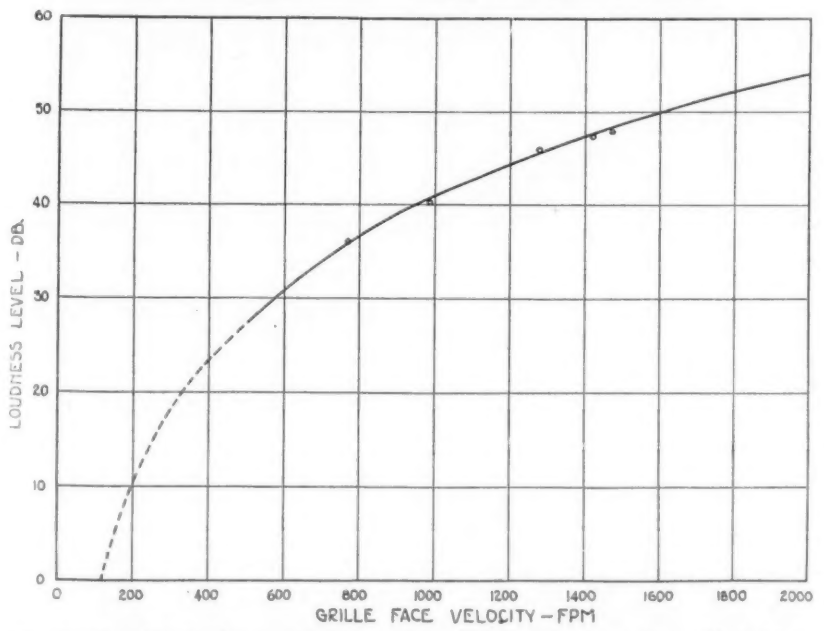

Fig. 3—Specific loudness of long throw grille. Room absorption 100 Sabins.

Volume & Velocity at Constant Loudness

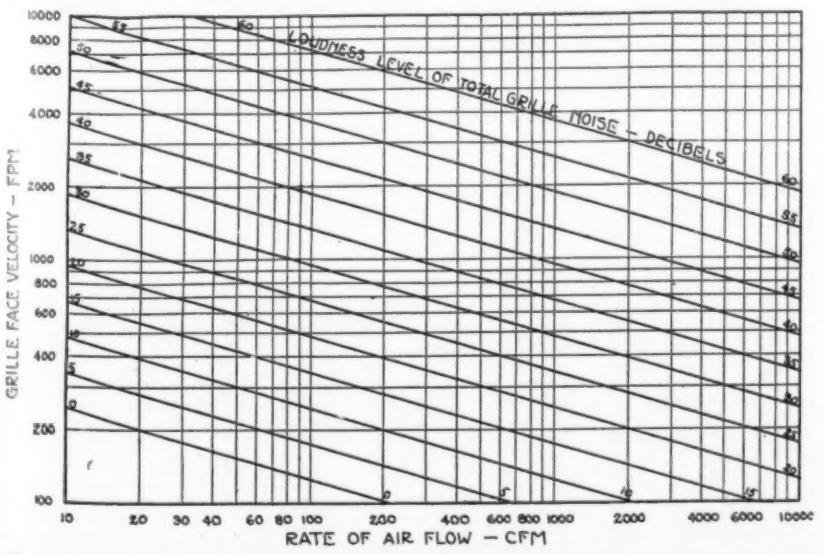

Fig. 4—Family of constant loudness lines for long throw grille. Room absorption 100 Sabins.

Noise Level Increase

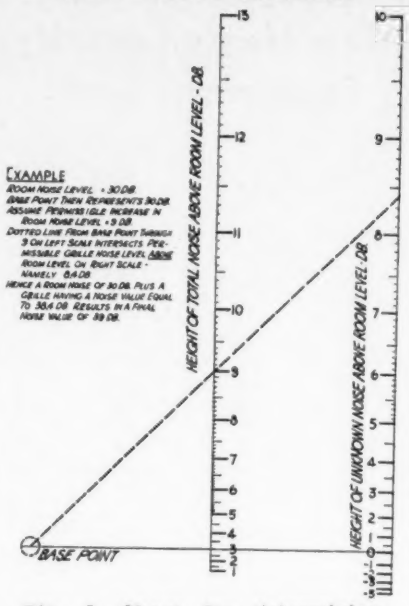
EXAMPLE
ROOM NOISE LEVEL = 30 DB
BASE POINT THEN REPRESENTS 30 DB
ASSUME PERMISSIBLE INCREASE IN ROOM NOISE LEVEL = 9 DB
DOTTED LINE FROM BASE POINT SLOPING 9 ON LEFT SCALE INTERSECTS PERMISSIBLE GRILLE NOISE LEVEL BELOW ROOM LEVEL ON RIGHT SCALE - NAMELY 8.4 DB
HENCE A ROOM NOISE OF 30 DB PLUS A GRILLE HAVING A NOISE VALUE EQUAL TO 38.4 DB RESULTS IN A FINAL NOISE VALUE OF 39 DB.
HEIGHT OF TOTAL NOISE ABOVE ROOM LEVEL - DB
HEIGHT OF UNKNOWN NOISE ABOVE ROOM LEVEL - DB
BASE POINT

Fig. 5—Chart for determining increase in room noise level due to addition of grille noise.

Conditioning Solves Humidity Problem In Drug Plant

(*Concluded from Page 23, Column 3*)

air conditioning, of which there are a great many in addition to the mere fact that it cools.

Air conditioning was installed in the capsule department for the purpose of making its operation independent of weather. The capsule is a mixture of gelatine and glycerine. The former absorbs moisture very rapidly, while the latter is extremely hygroscopic. Therefore, the moisture content of the mixture from which capsules are made must be regulated between very close limits. It is desirable also to avoid warm dry-bulb air temperatures in the vicinity of capsules.

Effervescent salts also are very hygroscopic, and exposure to moisture results in a serious loss of their essential properties.

The air-conditioning unit which serves these departments is so arranged that the air passes first through the cooling coil and afterward through a "backheater." With this arrangement, the backheater may be used for preventing unduly low room temperatures during mild or cool but damp weather.

The cooling coil is a direct-expansion coil using Freon, similar to the cooling coil used with the office air-conditioning unit, while the backheating coil is merely a steam heating coil. Fan used with this unit circulates a total air quantity of about 4,800 c.f.m., of which approximately 10% is outside air.

The portion of the building which is conditioned by this unit has a total volume of 16,600 cu. ft. The total refrigerating load was estimated to be 142,200 B.t.u.'s per hour, for which a refrigerating capacity of 13.1 tons was allowed.

It was estimated that the peak load on the industrial section would occur at 11:00 a. m., while the cooling load on the office section would reach its maximum in the afternoon. For this reason the maximum load on the refrigerating unit was estimated to be 21 tons, rather than the sum of the peak loads on each air-conditioning unit, or 24.3 tons.

The compressor used is a Frick 7¾ inch by 5-inch Freon unit, complete with shell and tube condenser, manifolds, gauges, etc. The equipment is so designed that by speeding up the compressor 30 tons of refrigeration will be developed, as additional process conditioning is contemplated.

An interesting detail of this installation is that the liquid and suction refrigerant tubing have been placed in intimate contact and enclosed within a common insulating covering so that a "heat exchanger" is formed. The result of this arrangement is that some of the heat in the liquid is transferred to the suction gas.

Thus the beneficial effect of an additional drying of the suction gas is obtained, while the liquid refrigerant arrives at the direct expansion coils cooler.

The system has proven to be very satisfactory, and quite capable of maintaining the inside design condition of 77° dry bulb and 74° wet bulb temperatures, with the outside design dry and wet bulb temperatures of 86° and 77° respectively.

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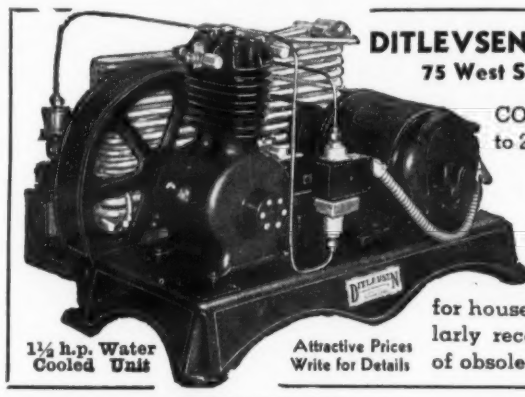

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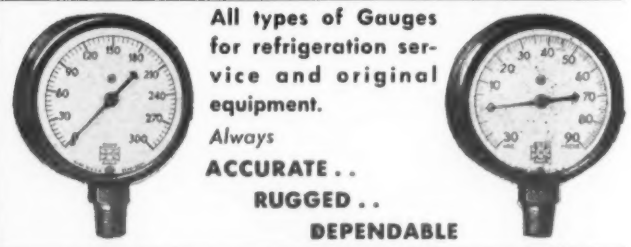

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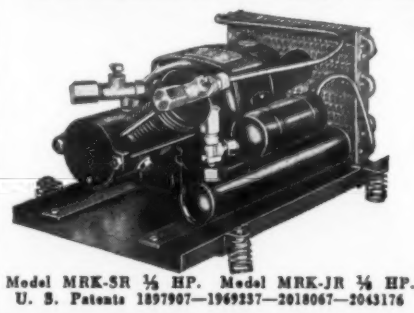

Model MRK-SR ½ HP. Model MRK-JR ¼ HP.
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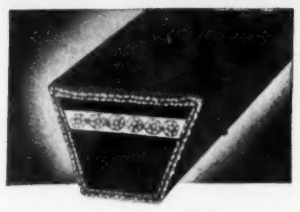

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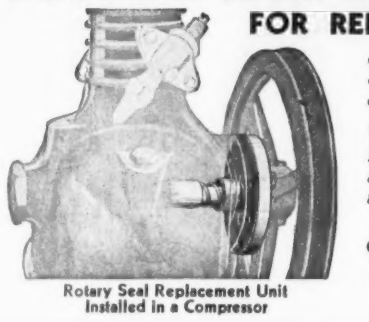

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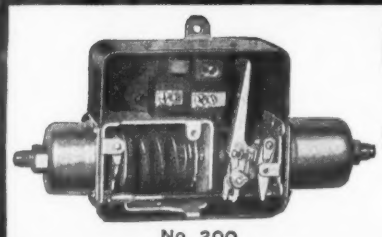

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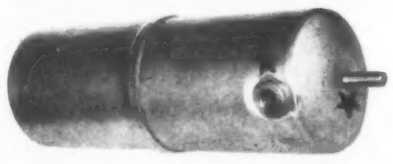

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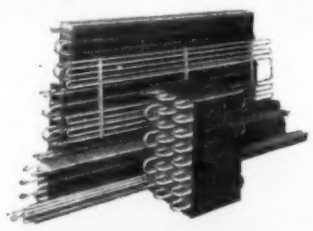

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Edison G-E Offers New Home Laundry Equipment Lines

CHICAGO—Five individual lines of washing machines and two individual lines of automatic rotary ironers are included in Edison General Electric Appliance Co.'s Hotpoint line of home laundry equipment for 1937. Three of the washer lines are offered in both standard and deluxe models, with the remaining two in deluxe style. The ironer lines include a standard and deluxe line, and a standard wringer post rotary ironer.

The home laundry equipment line, most complete in Hotpoint history, combines smart styling and a number of features designed to provide quiet operation, efficient service, and long life.

Outstanding feature is the "Thriftivator," which provides three separate zones of washing action. Gentle washing corresponding to dipping is found at the top of the blades near the water line. Halfway down is the intermediate zone, and the most vigorous action, corresponding to scrubbing, is found at the tip of the blades at the bottom of the washer. Clothes are circulated through the separate washing zones for thorough cleaning.

Modern styling, convenience and safety features, and simplicity of operation characterize the new Hotpoint ironers.

The roll moves to the shoe, and not the shoe to the roll, as in other type rotary ironers. Long-life heating element, fully enclosed motor, and an adjustable thermostat to keep heat at the desired temperature, are other features. The new ironers are said to be capable of ironing 2,500 sq. in. per minute.

Both washers and ironers are covered by a one-year written guarantee on material and workmanship.

Lynes Heads Georgia Power Kitchen Modernizing Program

ATLANTA—Guy Lynes, for the past two years manager of Georgia Power Co.'s traveling kitchen demonstration in northern Georgia, has been appointed head of the company's kitchen modernization program.

Mrs. Lynes, formerly her husband's assistant, is now home equipment specialist. In her new capacity, Mrs. Lynes will train new home economists, test new equipment, and handle general home office service work.

Mr. and Mrs. Armstrong Hunt, who have been handling the company's traveling kitchen display in the southern part of the state, have been transferred to the northern Georgia territory formerly covered by Mr. and Mrs. Lynes.

Mr. and Mrs. W. W. Connell will take over the southern territory on March 1; after a month of training. Mrs. Connell was formerly home economist in the company's Macon divisional office.

Hotpoint Range in Porcelain Finish Introduced

CHICAGO—Edison General Electric Appliance Co. now offers the Hotpoint Dorchester electric range in full porcelain enamel finish, according to D. C. Marble, range sales manager. This range, Mr. Marble declares, is the lowest priced, built-to-the-floor model ever offered in this finish.

The range also features a new charcoal type smokeless broiler pan, new type oven lining, and improved type switchboard assembly.

J. Bunn Cavin Is Appointed Refrigeration-Radio Manager

LITTLE ROCK, Ark.—J. Bunn Cavin has been appointed manager of the enlarged refrigeration and radio department of Manufacturers' Furniture Co. here. The company sells Kelvinator and Norge electric refrigerators, and RCA Victor, Stewart-Warner, and Grunow radios.

Davidson Establishes Quarters In Merchandise Mart

CHICAGO—H. Davidson, dealing in electrical appliances, enamel, porcelain and art wares, metal hampers, and cosmetics, will occupy space in the Merchandise Mart after Feb. 1.

H. and Essie G. Davidson will be in charge of the office.

— PATENTS —

Issued January 12, 1937

2,067,208. REFRIGERATING APPARATUS. Sylvester M. Schweller, Dayton, assignor to General Motors Corp., Dayton. Original application May 28, 1934. Serial No. 727,942. Divided and this application June 5, 1935. Serial No. 25,096. 7 Claims. (Cl. 62—126)

2,067,303. PORTABLE AIR CONDITIONER. John Thomas Tennison, Enid, Okla. Application Jan. 29, 1936. Serial No. 61,425. 4 Claims. (Cl. 183—12)

2,067,324. REFRIGERATING APPARATUS AND METHOD. Charles L. Jones, Pelham, N. Y., and Howard S. McIlvain, Belleville, N. J., assignors, by mesne assignments, to Adico Development Corp. Application April 27, 1931. Serial No. 533,036. 22 Claims. (Cl. 62—91.5)

2,067,325. REFRIGERATING APPARATUS AND METHOD. Charles L. Jones, Pelham, N. Y., and Howard S. McIlvain, Belleville, N. J., assignors, by mesne assignments, to Adico Development Corp. Original application April 27, 1931. Serial No. 533,036. Divided and this application May 7, 1931. Serial No. 535,784. 17 Claims. (Cl. 62—91.5)

2,067,431. REFRIGERATING APPARATUS. Carl W. Albertson, Clinton, Iowa. Application March 14, 1927. Serial No. 175,021. 35 Claims. (Cl. 62—126)

2,067,440. SAFETY DEVICE FOR REFRIGERATION SYSTEMS. Newell B. Finney, Indianapolis. Aplication Jan. 15, 1934. Serial No. 706,671. 7 Claims. (Cl. 177—311)

2,067,504. REFRIGERATOR CABINET. William E. Richard, Galesburg, Ill. Application Sept. 19, 1935. Serial No. 41,249. 6 Claims. (Cl. 62—116)

2,067,638. REFRIGERATING APPARATUS. James R. Hornaday, Dayton, assignor to General Motors Corp., Dayton. Application Feb. 16, 1935. Serial No. 6,798. 8 Claims. (Cl. 62—1)

2,067,643. FLAT TYPE EVAPORATOR STRUCTURE. Roland H. Money and Lewis M. Crosley, Cincinnati, assignors to The Crosley Radio Corp., Cincinnati. Application Aug. 23, 1934. Serial No. 741,132. 7 Claims. (Cl. 62—126)

2,067,676. COOLING SYSTEM FOR UTILIZING SOLID CARBON DIOXIDE. David Savidge Lees, Norton-on-Tees, England, assignor to Imperial Chemical Industries. Application July 24, 1934. Serial No. 736,758. In Great Britain July 25, 1933. 4 Claims. (Cl. 62—1)

2,067,745. ROOM THERMOSTAT. Walter W. Williams, Bloomington, Ill. Application May 12, 1934. Serial No. 725,247. 3 Claims. (Cl. 200—138)

2,067,799. FREEZING TRAY SEPARATOR CONSTRUCTION. Christian Steenstrup, Schenectady, assignor to General Electric Co. Application Dec. 6, 1934. Serial No. 756,243. 7 Claims. (Cl. 62—108.5)

2,067,830. HYDRATOR. James A. Depew, Miami, Fla. Application Dec. 2, 1935. Serial No. 52,589. 5 Claims. (Cl. 62—1)

2,067,836. CONTROL MEANS. Andrew Kip Foulds, West Englewood, N. J., assignor to Detroit Lubricator Co., Detroit. Application May 9, 1932. Serial No. 610,064. 23 Claims. (Cl. 137—104)

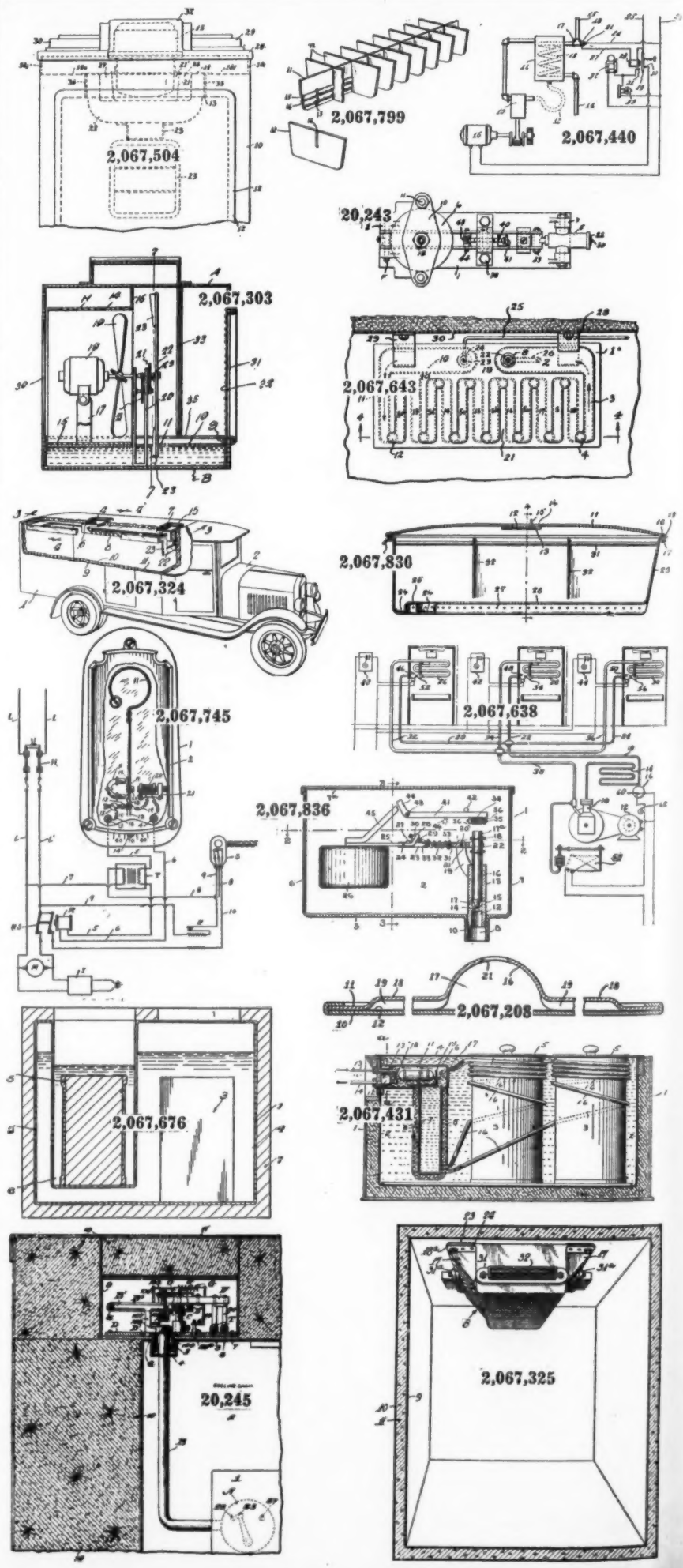
Reissues

20,243. DEFROSTING MECHANISM. Lars H. Vold, Butler, Pa., assignor to Faust F. Crampton, Toledo. Original No. 1,833,544, dated Nov. 24, 1931. Serial No. 276,534, May 10, 1928. Application for reissue Nov. 21, 1933. Serial No. 699,096. 14 Claims. (Cl. 62—4)

20,245. MEANS FOR AUTOMATICALLY DEFROSTING REFRIGERATING UNITS. Charles T. Hoffman, Washington, D. C., assignor, by direct and mesne assignments, to Lloyd M. Keighley, Dayton. Original No. 1,886,953, dated Nov. 8, 1932. Serial No. 394,209, Sept.21, 1929. Application for reissue Jan. 25, 1933. Serial No. 653,551. 46 Claims. (Cl. 62—4)

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.



211,830 Commercial and Air Conditioning Units Sold During 1936 by Nema Companies

The following report of commercial refrigerating and air-conditioning equipment sales for the year, 1936, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the following 15 companies:

Brunner Manufacturing Co., Carrier Engineering Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Corp., Kelvinator Corp., Leonard Refrigerator Co., Merchant & Evans Co., Norge Corp., Servel, Inc., Uniflow Manufacturing Co., Universal Cooler Corp., Westinghouse Electric & Manufacturing Co., York Ice Machinery Corp.

	SALES FOR YEAR, 1936							
	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete	4,206	$ 314,675	17	$ 1,486	294	$ 26,735	4,517	$ 342,896
2. Pressure Water Coolers—Complete	14,703	1,572,882	53	5,618	815	90,188	15,571	1,668,688
3. Water Coolers—Low Side Only	930	60,245	11	551	46	3,080	987	63,876
4. Ice Cream Cabinets—Complete	21,016	2,849,041	842	84,148	1,860	189,936	23,718	3,123,125
5. Ice Cream Holding Cab. Only (Remote)	6,387	864,110	148	16,393	272	32,534	6,807	913,037
6. Bottled Beverage Coolers—Complete	31,747	2,290,537	768	53,084	775	54,078	33,290	2,397,699
7. Milk Cooling Cabinets (No High Sides)	1,972	140,297	1	78	636	30,053	2,609	170,428
8. Air Conditioners—Self Contained	4,710	969,609	3	783	522	125,226	5,235	1,095,618
9. Air Conditioners—Floor Type (No High Sides)	2,720	892,827	9	1,682	306	88,068	3,035	982,577
10. Air Conditioners—Ceiling (Cooling Only—No High Sides)	2,149	329,786	10	2,499	403	50,912	2,562	383,197
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	485	283,405	6	4,290	37	24,086	528	311,781
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	235	55,866	.....	.....	1	600	236	56,466
13. Condensing Units Less Than ⅓ Hp.	21,886	1,094,556	351	24,812	12,161	747,686	34,398	1,867,054
14. Condensing Units—⅓ Hp.	23,434	1,750,235	306	25,459	7,696	601,862	31,436	2,377,556
15. Condensing Units—½ Hp.	17,252	1,634,395	410	43,312	4,910	498,667	22,572	2,176,374
16. Condensing Units—¾ Hp.	12,005	1,468,742	204	27,817	1,638	215,367	13,847	1,711,926
17. Condensing Units—1 Hp.	9,340	1,382,729	166	28,675	1,840	298,632	11,346	1,710,036
18. Condensing Units—1½ Hp.	5,460	1,053,117	58	11,761	680	134,427	6,198	1,199,305
19. Condensing Units—2 Hp.	2,189	485,251	29	6,915	431	100,703	2,649	592,869
20. Condensing Units—3 Hp.	2,161	585,238	22	5,445	457	104,011	2,640	694,694
21. Condensing Units—5 Hp.	1,068	490,536	13	4,844	146	52,352	1,227	547,732
22. Condensing Units—7½ Hp.	611	359,511	2	1,586	63	35,909	676	397,006
23. Condensing Units—10 Hp.	788	561,953	1	823	111	76,975	900	639,751
24. Condensing Units—15 Hp.	727	602,061	4	1,404	71	53,735	802	657,200
25. Condensing Units—20 Hp.	436	496,747	.....	.....	16	18,178	452	514,925
26. Condensing Units—25 Hp.	349	445,461	.....	.....	7	9,160	356	454,621
27. **Total Lines 13 to 26 Inclusive**	**97,706**	.....	**1,566**	.....	**30,227**	.....	**129,499**	.....
28. **Total Lines 1, 2, 4, 6, 8, and 27**	**174,088**	.....	**3,249**	.....	**34,493**	.....	**211,830**	.....
29. Commercial Evaporators (Not Reported Above)	44,641	1,218,927	2,079	68,424	13,430	370.354	60,150	1,657,705
30. Air-Conditioning Evaporators (Not Reported Above)	3,122	397,051	2	270	120	57,886	3,244	455,207
31. **Total Commercial & Air Conditioning**	.....	**$24,649,790**	.....	**$423,159**	.....	**$4,091,400**	.....	**$29,163,349**

Report for December Shows Sales of 8,626 Units By 15 Members of National Association

The following report of commercial refrigerating and air-conditioning equipment sales for December, 1936, were made to the Commercial Refrigeration Section of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) by the 15 companies listed above in the report for the year.

	SALES FOR DECEMBER, 1936							
	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete	18	$ 854	.....	$.....	41	$ 4,238	59	$ 5,092
2. Pressure Water Coolers—Complete	500	55,415	.....	.....	32	2,704	532	58,119
3. Water Coolers—Low Side Only	61	3,718	.....	.....	5	299	66	4,017
4. Ice Cream Cabinets—Complete	250	38,627	1	100	62	7,875	313	46,602
5. Ice Cream Holding Cab. Only (Remote)	113	14,392	.....	.....	13	1,370	126	15,762
6. Bottled Beverage Coolers—Complete	341	25,334	1	80	24	1,676	366	27,090
7. Milk Cooling Cabinets (No High Sides)	90	8,222	.....	.....	1	41	91	8,263
8. Air Conditioners—Self Contained	407*	104,235*	.....	.....	61	15,099	346*	*89,136
9. Air Conditioners—Floor Type (No High Sides)	136	61,152	.....	.....	46	11,595	182	72,747
10. Air Conditioners—Ceiling (Cooling Only—No High Sides)	125	17,655	.....	.....	16	1,870	141	19,525
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	69	43,005	2	1,000	3	1,444	74	45,449
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	7	785	.....	.....	.....	.....	7	785
13. Condensing Units Less Than ⅓ Hp.	915	38,960	5	328	1,222	75,805	2,142	115,093
14. Condensing Units—⅓ Hp.	1,092	74,846	6	486	1,316	98,804	2,414	174,136
15. Condensing Units—½ Hp.	909	83,159	19	1,988	206	21,257	1,134	106,404
16. Condensing Units—¾ Hp.	571	71,415	1	143	100	13,392	672	84,950
17. Condensing Units—1 Hp.	445	67,616	6	1,064	120	19,657	571	88,337
18. Condensing Units—1½ Hp.	200	38,930	2	390	29	5,643	231	44,963
19. Condensing Units—2 Hp.	97	22,207	.....	.....	21	5,017	118	27,224
20. Condensing Units—3 Hp.	94	26,682	1	338	48	13,362	143	40,382
21. Condensing Units—5 Hp.	66	29,929	.....	.....	9	4,275	75	34,204
22. Condensing Units—7½ Hp.	38	25,096	.....	.....	4	2,342	42	27,438
23. Condensing Units—10 Hp.	45	34,076	.....	.....	8	5,604	53	39,680
24. Condensing Units—15 Hp.	37	32,066	.....	.....	11	7,460	48	39,526
25. Condensing Units—20 Hp.	26	30,573	.....	.....	1	977	27	31,550
26. Condensing Units—25 Hp.	32	41,207	.....	.....	.....	.....	32	41,207
27. **Total Lines 13 to 26 Inclusive**	**4,567**	.....	**40**	.....	**3,095**	.....	**7,702**	.....
28. **Total Lines 1, 2, 4, 6, 8, and 27**	**5,269**	.....	**42**	.....	**3,315**	.....	**8,626**	.....
29. Commercial Evaporators (Not Reported Above)	2,448	62,341	60	2,129	1,264	28,192	3,772	92,662
30. Air-Conditioning Evaporators (Not Reported Above)	707	49,507	.....	.....	5	3,500	712	53,007
31. **Total Commercial & Air Conditioning**	.....	**$893,534**	.....	**$ 8,046**	.....	**$353,498**	.....	**$1,255,078**

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

ASSISTANT SUPERINTENDENT — for modern, new refrigerator factory in East, manufacturing ice equipment, including domestic and commercial refrigerators, water coolers, beverage chests, etc. Should be thoroughly experienced with steel construction, stamping presses, spot welding, metal assembly, etc. Prefer man with experience in wage incentive and bonus plans, in assembly line production. Give complete personal qualifications, experience, and salary desired. Box 901, Air Conditioning and Refrigeration News.

KEROTEST WANTS SALEMEN for Mid-West territory, contacting all wholesale factors refrigeration trade. State full qualifications, salary and experience. J. S. Forbes, KEROTEST MANUFACTURING CO., 2525 Liberty Ave., Pittsburgh, Pa.

DRAFTSMAN—experience on refrigerator cabinet construction and design. Should be familiar with die-stamping, metal work and allied wood construction. Good opportunity with progressive new firm in large eastern city. State fully: experience, salary expected, and personal qualifications. Box 902, Air Conditioning and Refrigeration News.

BUSINESS OPPORTUNITY

UNIQUE SELF-AGITATING dessert freezing tray for electric refrigerators requires executive with capital to establish business or established manufacturer to acquire as additional line. Is a natural accessory for distribution through established refrigerator dealer channels. Nine million electric refrigerators now in use assure wide market. Entirely new design and unusually well adapted to low cost tooling and manufacture. Complete information to responsible inquirers. Box 900, Air Conditioning and Refrigeration News.

REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for prices and dealerships. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

MAJESTIC-GENERAL ELECTRIC-SERVEL hermetic units repaired and exchanged. Majestic with six months' factory guarantee $18.50, with one year factory guarantee $20.50. General Electric monitor top domestic units with one year factory guarantee $25.00. Servel hermetic units with one year factory guarantee $18.50. Prices f.o.b. our factory. Every unit undergoes complete tests for temperature, cycling, wattage consumption and quietness on genuine test equipment. REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

MAJESTICS EXCHANGED or rebuilt $18.50. Genuine Majestic repair and test equipment and parts used throughout. General Electric household units rebuilt $25. Prices f.o.b. Chicago. Six months' guarantee. Complete Majestic parts price list on request. REFRIGERATION PRODUCTS, INC., 123 West Illinois St., Chicago, Illinois.

EQUIPMENT WANTED

WANTED TO BUY: Commercial compressors, new or used; also complete condensing units and accessories; also commercial and domestic motors. Prices and particulars. Box 895, Air Conditioning and Refrigeration News.

DISTRESSED STOCK, COPPER TUBING, AND BRASS ROD. MAIL LIST. BOX 903, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

ATTENTION—DAIRY, REFRIGERATION and case men. I have to offer the following Frigidaire units. Model A twin cylinder in perfect shape, at $22.50 per unit complete. Also model A 125, at $25.00 per unit. These units have Frigidaire one quarter H.P. motors, sixty cycle, 110/220, with cold control switch and contain SO_2. Please send deposit and quantity of units wanted. Will ship balance C.O.D. Freight charges collect. REFRIGERATION SURPLUS JOBBERS, 5622 Woodland Ave., Cleveland, Ohio.

EXPORTERS—DEALERS. Rebuilt Refrigerators consisting of Norges, Westinghouses, Frigidaires, General Electrics; others from $27.50. Rebuilding done in our own factory on premises. Also carry large stock brand new refrigerators, standard makes, in original cases; for promotional sales. Prices will astound you. Write for information. INTERSTATE REFRIGERATOR CORP., 96 Fifth Ave., New York City.

ATTENTION DISTRIBUTORS! Food reproductions for refrigerator display. Manufacturers of artificial fruits, vegetables, meats, and fowl. Fifty pieces from which to select. Sets to accommodate every make refrigerator. Reasonable prices ranging from $2.75 to $9.00 per set. Write for complete data. ROMAN ART CO., INC., 2704 Locust Blvd., St. Louis, Mo.

SCHOOLS

OUR STUDENTS include service men and executives already engaged in refrigeration and air conditioning, also men learning in order to enter this field. We teach our students to reason out their problems rather than give them complicated rules. For information write to DETROIT SCHOOL OF REFRIGERATION AND AIR CONDITIONING, 4123 Grand River, Detroit, Mich.

Low-Price Homes to Be Demonstrated in National Program

WASHINGTON, D. C.—A nation-wide program to demonstrate the feasibility of construction of low-priced homes was launched recently by national organizations identified with the building industry.

Associations representing the lumber, concrete, and brick industries are sponsoring the program, which carries out general principles of small house construction evolved by the Federal Housing Administration.

National Lumber Manufacturers Association and National Retail Lumber Dealers Association are sponsoring the national demonstration home program for the lumber industry. In addition, National Concrete Masonry Association, National Concrete Association, and Brick Manufacturers Association.

Coincident with the announcement, the first of a series of dealer meetings, sponsored by National Retail Lumber Dealers Association, opened at Indianapolis. At this first meeting, a demonstration home program was launched which has as its objective the construction of one or more low-priced homes in approximately 1,000 communities throughout the country.

To coordinate the nation-wide program and make it more comprehensive, plans have been made for participation by public utilities, newspapers, and retail department stores. Through these combined efforts, it is expected that a large number of small homes will be built throughout the country by the end of Spring.

Kelvinator Sponsors Newark Home-Planning Session

NEWARK — Architects and engineers in the Newark area met in Krich Auditorium Jan. 28 and 29 to discuss plans for erection of homes in the $7,500 class, completely equipped with air conditioning, electric refrigeration, and various electric appliances. The meeting was co-sponsored by Kelvinator division, Nash-Kelvinator Corp., and Krich-Radisco, Inc., local Kelvinator distributor.

Speakers stressed advantages of air conditioning in the home and discussed plans for low-cost residential installations. They were: Jack Rosenberg, manager of Krich-Radisco's residential air-conditioning department; Louis T. M. Ralston, Nash-Kelvinator division manager; Jack K. Knighton, manager of Nash-Kelvinator Corp.; Andre Merle, Nash-Kelvinator engineer; William H. Ballman, Krich-Radisco's chief engineer; and Morris N. Partridge.

BUYER'S GUIDE

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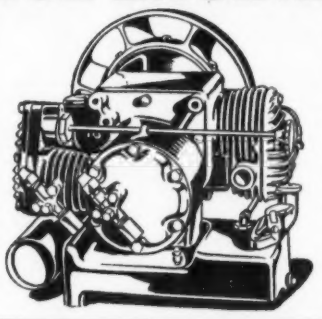

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References: Dun & Bradstreet—Nat'l City Bank

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